

# THE IRON AGE

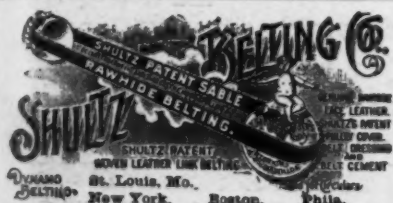
A Review of the Hardware, Iron, Machinery and Metal Trades.

Published every Thursday Morning by David Williams Co., 232-238 William St., New York.

Vol. 67: No. 7. New York, Thursday, February 14, 1901.

\$3.00 a Year, including Postage.  
Single Copies, Ten Cents.

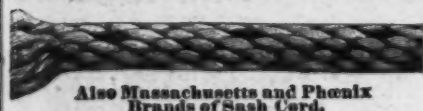
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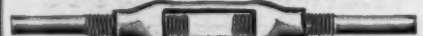
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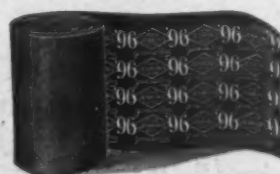
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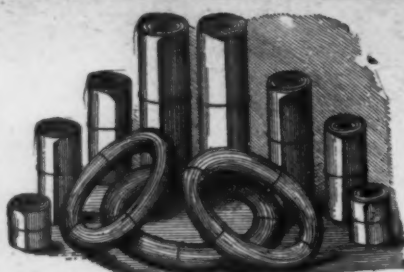
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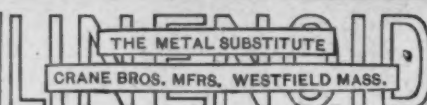
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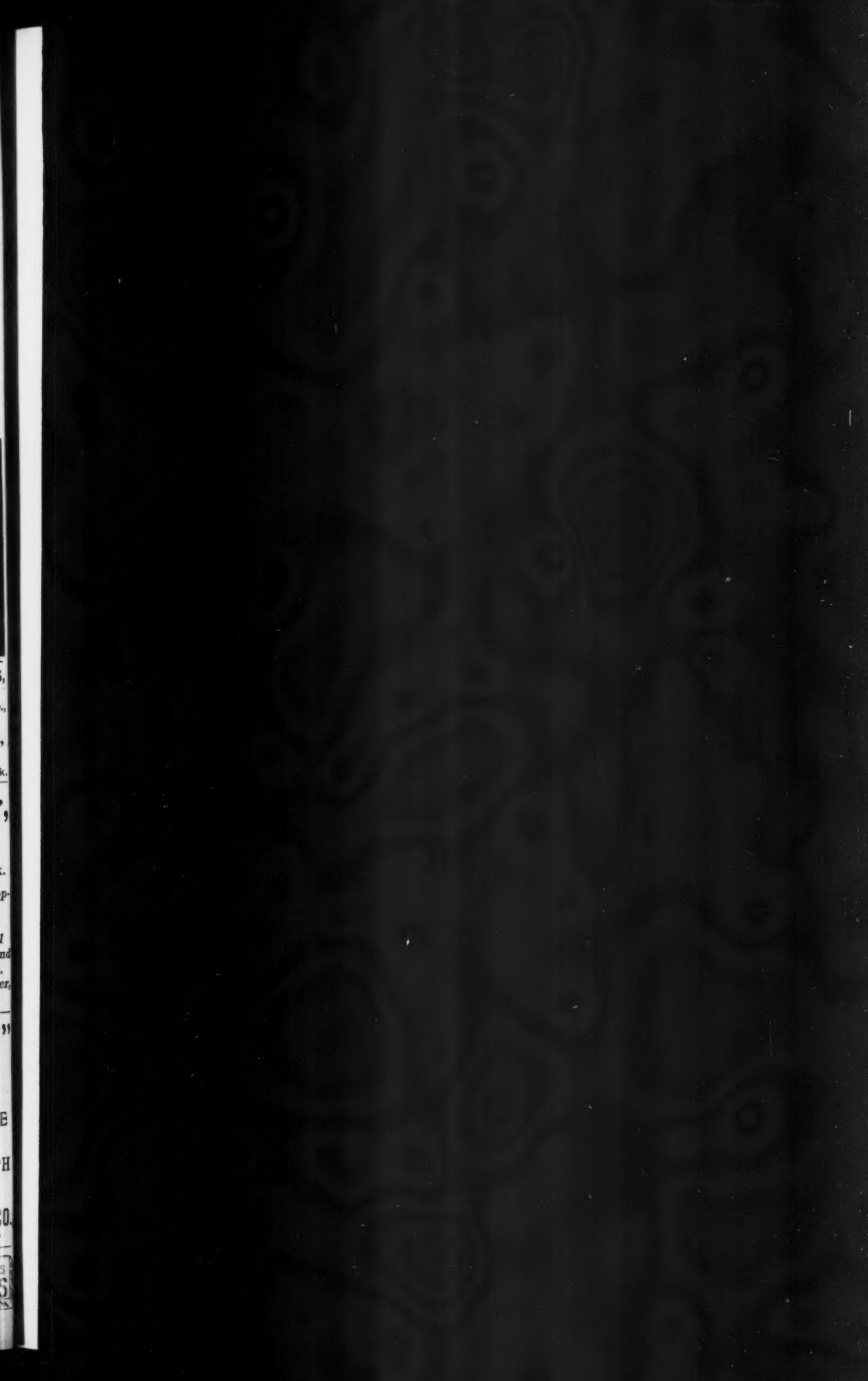
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# THE IRON AGE

THURSDAY, FEBRUARY 14, 1901.

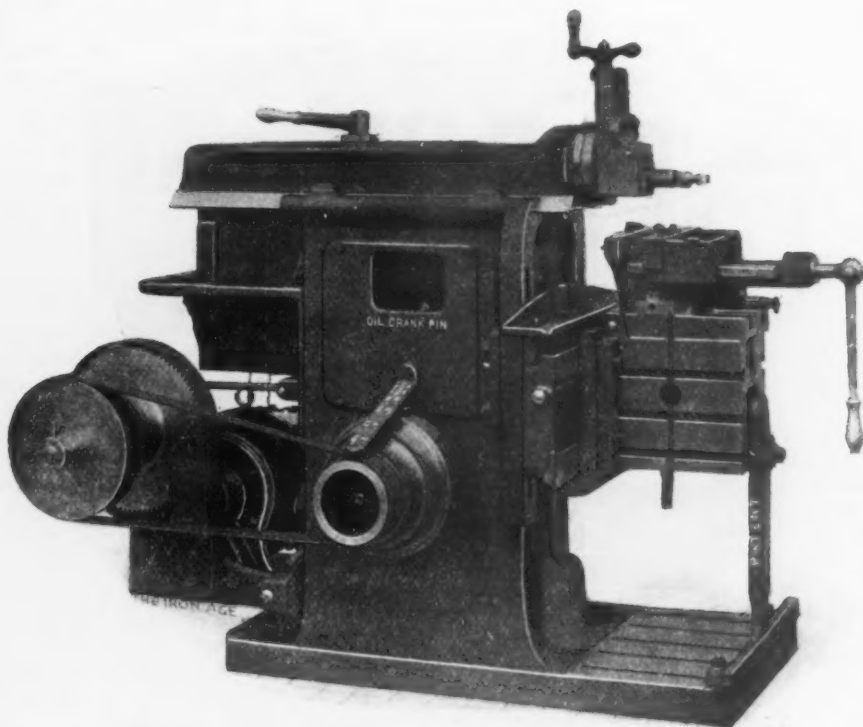
## The Gould & Eberhardt Extension Base Shaper.

The accompanying illustrations show the extension base shaper, with direct connected electric motor, built by Gould & Eberhardt of Newark, N. J. It will be noticed that the motor rests on a pan and that the switchboard, Fig. 2, is fastened to a bracket on the back of the machine, making the whole arrangement self contained. The switchboard and starting box were designed specially to operate under a 110 and 220 volt, three-wire, direct current system, and a double pole and double throw main line knife switch are provided. On account of the shortness of the belt and its consequent liability to slip under a heavy cut, an ingenious method of taking up the slack in the belt is employed.

work. The furnace is expected to be ready for blast in about 60 days, and is expected to turn out, when running on fine foundry iron, about 300 tons per day, but when on Bessemer from 350 to 400 tons per day. The cast house will be remodeled and a water purifying plant added.

## To Raise the "Maine."

A firm of Chicago contractors have been notified that they were the successful bidders for the work of raising the wreck of the battle ship "Maine" from the waters of Havana harbor. If no hitch occurs in the process of drawing up the contract, Chamberlin & Co., who have offices at 225 Dearborn street, will undertake the task.



THE GOULD & EBERHARDT EXTENSION BASE SHAPER.

The pan on which the motor rests is connected to the machine proper by a swinging joint, which permits of an up and down adjustment for keeping the belt tight. This adjustment is made by means of nuts on a threaded stud, which projects from the machine over the top of the motor and holds the latter firmly in position. These shapers, a large shipment of which has just been made to the United States Navy Yard at Mare Island, Cal., are furnished with an extension base and support for the table, and have a special tilting table for shaping tapering work.

**Clinton Iron & Steel Company.**—The Clinton Iron & Steel Company, operating Clinton Furnace, at Pittsburgh, have decided to remodel and rebuild that stack, and shut it down last week for this purpose. The present stack is 73 feet high by 16-foot bosh. The stack will be raised to 85 feet and the diameter increased 1 foot. The furnace is already equipped with four stoves of the C. H. Foote design, which were installed by David Lamond, engineer, of Pittsburgh. An automatic skip of the Walter Kennedy design is also to be added and an entire new jacket built. The Meehan Boiler & Construction Company of Lowellville, Ohio, have the contract for the iron

With it is coupled the job of raising the Spanish transport "Alfonso XII," which is beached on the shore near by the "Maine." The firm were one among 12 bidders.

The Chamberlin agreement is to raise both vessels for the salvage there is in them. It also covenants to pay the United States Government 3 per cent. of all proceeds, besides restoring all personal property which belonged to the officers and the crew of the "Maine."

If the contract is let and fulfilled, an ambition cherished for two years by N. F. Chamberlin will be realized. The firm were formed expressly for the purpose, and, according to Mr. Chamberlin, it is expected that more than \$1,000,000 will be made by the concern in the undertaking.

The plans provide for the erection of a cofferdam around the sunken "Maine," while the beached transport will be raised out of the water and hauled on the shore by means of a huge and intricate system of blocks, tackles and cables and ginpoles. The cofferdam for the "Maine" will be a mammoth affair. It will be oblong in contour, including within it every piece of wreckage from the "Maine." Its construction will consist of brush, rock, earth, gravel, and sack sand, so constructed as to be practically impervious to water. The base will

be 80 feet wide and the surface 35 feet broad, large enough for a team to travel along it in safety. It will be 45 feet in height, the incline, of course being on the inside.

The brush, the main feature of the dam, will be tied in bundles 30 feet in length, composed of broken joints, so as to make a solid bundle. These bundles will be weighted with rock and sunk into place. They will be interlaid and woven together in a way that will form a perfect piece of network around the ship, and as each layer goes down earth and gravel will be packed among them. Heavy bags of sand will compose the front end of the base, while a few layers of them will be placed on top, to be surmounted with earth.

Once constructed, the contractors will put the pumps to work, and when the bottom of the harbor is reached a well will be dug in it to hold all the bilge water that may leak through. Pumps will be kept at work whenever the well fills with water.

The plans for raising the "Alfonso XII" are radically different. The transport, one of the best Spain had, is

a dozen big wholesale establishments with their valuable contents were destroyed, and the loss will amount to at least \$4,000,000.

### Our Shipping Industry.

"The Shipping Industry of the United States and Its Relation to the Foreign Trade," is the title of a document just issued by the Bureau of Statistics of the Treasury Department. It discusses the economic conditions which surround the present state of the shipbuilding industry in this country in both their historical and their industrial aspects.

Historically, it finds that the use of ironclads in the Civil War sounded the doom of wooden ships as instruments of national defense, and thenceforth turned over maritime ascendancy to the iron producing nations, in which Great Britain had then held the leadership. But with the ascendancy of the United States in iron and steel production and the advent of this country into the

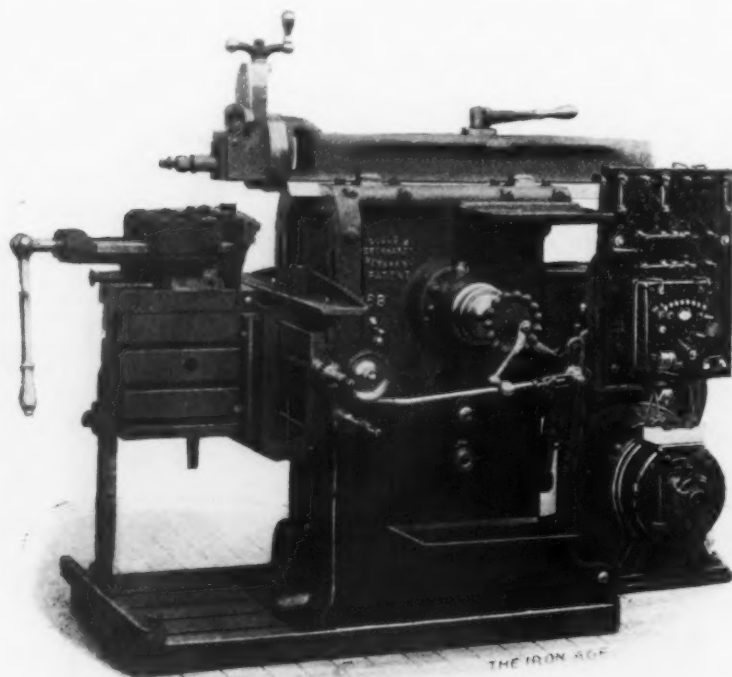


Fig. 2.

THE GOULD & EBERHARDT EXTENSION BASE SHAPER.

beached, with its prow sticking out of the water against a large table of rock. With the rigging once set it is expected that within two hours it will be hauled upon the rock, where it can be overhauled.

The operation of raising both ships will cost about \$75,000, the contractors say, while the salvage in the "Maine" is expected to be enormous. In its hold, according to the Government schedule, there is now \$500,000 worth of ammunition and 100 tons of copper and brass. A hundred engines are stored away in the hulk of the vessel, while the armament and fittings are figured to be worth considerable money even if the vessel cannot be repaired.

But this is a contingency not anticipated by the contractors. The explosion on the "Maine" was in the bow, and only in that part of the vessel was it wrecked. The construction of a bulkhead will, the contractors believe, shut off the bow and the war ship will float.

One of the most disastrous fires experienced for years in Montreal, Canada, visited that city on January 23, involving the destruction of a whole block of business buildings, bounded by St. Peter, St. Sacramento, St. Nicholas and St. Paul streets, and including the magnificent Board of Trade Building, valued at over \$1,000,000. Over

new era of oceanic responsibility, both commercially and politically, the present period of our maritime progress is clearly marked off from all that has preceded it. Historically our development in shipbuilding has reached the point at which the economic outlook is based upon the most favorable industrial and commercial conditions ever known in the history of our merchant marine. These conditions are shown first in the internal development of the shipbuilding industry.

The influence of the naval policy on merchant shipbuilding has developed shipbuilding plants to a point of equipment with tools and machinery and to a scale of production which, with a larger demand for ships, would almost put the best American shipbuilders on the same plane as British shipbuilders as to cost of production. The use of electricity in the operation of shipbuilding plants, the employment of pneumatic tools and the services of cranes and derricks in handling heavy materials at every stage have revolutionized ship making methods in the United States to such an extent that the best shipyards in America are even better equipped than those of Europe. The chief obstacle to shipbuilding in competition with foreign shipbuilders is the lack of sufficient orders at our shipyards to keep them busy on a sufficiently uniform volume of work.



The difference in the labor cost of production in foreign and American shipyards is conceded to be about 25 per cent. greater on the hull and 50 per cent. greater on the machinery in the American yard. This difference, if accepted as correct, it is held, must be overcome by the introduction of piece work methods of labor and the standardizing of types and parts.

The report finds that, as compared with British ships, comparatively little progress has been made in this country in either of these respects, except in those located upon the Lakes. The Lake shipyards have turned out a volume of tonnage which has enabled them to utilize European methods of reducing cost more generally than is the case on the Atlantic seaboard.

The progress on the Lakes in productive economics has arisen largely from consolidation of plants, whereby specializing could be more generally developed and uniformity in type of construction introduced. The consolidation of shipbuilding plants with steel making establishments seems to be another direction in which economies in productive cost of ships must be realized. Shipbuilders complain that the fluctuations of prices in the steel market have been among the greatest hindrances to the development of steel shipbuilding in the United States, as compared with European prices, which are more stable.

The second part of the inquiry is devoted to the study of the merchant marine as a part of the national distributive system. It cites the fact shown by statistics that with the growth in the volume of ocean commerce an increasing proportion of our surplus wealth has been handled by sea, so that the national interest has been forced to avail itself of agencies not of its own control in order to reach and maintain foreign markets, subject to the discrimination of shipping lines organized in the service of our competitors.

The growth in the volume of our foreign commerce is mainly responsible for the fact that American capital has practically overcome its timidity for investment in either shipbuilding or shipping. Under existing conditions, however, distribution by sea between the United States and the outside world is in foreign control. For the fiscal year, ending June 30, 1900, imports and exports by sea aggregated \$2,089,528,666, only 9.3 per cent. of which value was carried in American vessels. Numerous tables are given, showing the growth in our foreign commerce and the decline in our foreign shipping.

Our Imports in 1900.

The official statistics show that the imports of iron and steel, as classified by the Bureau of Statistics, were \$20,443,908 in 1900, as compared with \$15,800,579 in 1899 and \$12,474,572 in 1898, these figures not including iron ore. These figures, of course, include the value of all the foreign iron and steel which was brought in under the drawback arrangements, and the iron and steel in transit, chiefly to Canada.

The figures of the bureau, so far as they deal with quantities, are as follows:

Imports of Iron and Steel.			
	1898.	1899.	1900.
Iron ore, gross tons.....	187,093	674,082	897,792
Pig iron, gross tons.....	25,152	40,393	52,565
Scrap, gross tons.....	1,783	10,925	34,431
Bar iron, net tons.....	21,414	22,167	21,047
Rails, gross tons.....	200	2,134	1,448
Hoops and bands, net tons....	38	743	185
Ingots, billets and steel not else- where specified, net tons....	11,934	14,113	14,238
Sheet and taggers, net tons....	2,543	7,889	5,711
Tin Plate, net tons.....	74,788	65,985	67,632
Wire rods, net tons.....	2,258	2,647	2,069
Anvils, net tons.....	346	268	255
Chains, net tons.....	132	210	291

The valuations of the pig iron, which was \$1,907,361 for 52,565 tons in 1900, indicate that a large part must have been ferromanganese, ferrosilicon and special pig. The bar iron imports, which continue very steady, are chiefly Swedish material, as proven by the fact that the valuation on 21,000 net tons was \$1,058,761, or about \$50 per ton. Similarly the imports of steel are largely billets for seamless tube manufacture and for other special purposes. The tin plate imports are, of course,

almost exclusively drawback plates. A small quantity, 1,038,694 pounds, in 1900, was exported, being probably merely in transit for Canada.

The imports of manufactures of iron and steel for which valuations only are given are as follows:

Imports of Manufactures of Iron and Steel.			
	1898.	1899.	1900.
Files, file blanks, rasps, &c.	\$40,492	\$47,624	\$90,283
Firearms .....	611,862	798,742	799,337
Machinery .....	1,930,436	2,185,566	3,963,395
Needles .....	409,427	366,412	369,365
Shot gun barrels, forged, rough bored.....	91,891	158,734	207,706
All other manufactures....	1,096,765	1,456,407	1,686,083

The heavy increase in the imports of machinery is worthy of note. It is understood that the principal item in this class is textile machinery. This is confirmed by the English export statistics, recently quoted, which showed an increase from £365,000 in 1899 to £648,000 in 1900, thus accounting for a very large share of the figures.

Among the interesting general items in the returns we may note an increase in the imports of manganese ore, from 114,885 tons in 1898 to 188,349 tons in 1899, and 256,252 tons, valued at \$2,042,361, in 1900.

The imports of plumbago fell off in 1900. They rose from 13,451 tons, valued at \$743,820, in 1898, to 20,753 tons, valued at \$1,990,352, in 1899, thus showing also the enormous increase in value. In 1900 the imports were 14,293 tons, valued at \$1,389,117.

So far as the imports of the metals are concerned we have the following data, the valuations being given:

Imports of Metals and Manufactures.			
	1898.	1899.	1900
Antimony ore.....	\$50,256	\$47,841	\$78,581
Regulus, or antimony....	143,909	240,988	285,749
Brass manufactures.....	24,611	58,916	20,113
Copper ore and matte....	654,355	2,243,583	5,009,828
Copper ingots.....	4,120,680	10,139,390	10,743,152
Copper manufactures.....	39,467	42,000	23,390
Lead in ore and base bul- lion .....	2,514,534	2,804,160	3,811,006
Lead, pig and old.....	20,828	12,623	13,186
Lead manufactures.....	8,329	12,983	5,854
Bronze manufactures.....	508,814	710,086	791,306
Platinum .....	1,178,142	1,482,157	1,728,777
Tin .....	8,770,221	16,746,105	19,458,586
Spelter .....	109,624	151,956	97,762
Zinc manufactures.....	13,448	14,800	36,836
All other metals, metal com- positions and manufac- tures of.....	3,479,221	4,008,942	5,414,508

It will be observed that the imports of manufactures of the metals are not large. It is a different matter with the crude materials. The copper imports are almost exclusively ores and furnace material, which comes to us because we can handle it in our smelters and refineries cheaper than any other country. The bulk of the fine metal thus produced goes to swell our exports of copper. The imports of ore and matte were 31,637 tons in 1899 and 54,329 tons in 1900, while the imports of pigs, blister, &c., were 71,922,340 pounds in 1899 and 68,797,591 pounds in 1900.

The lead imports in ores and base bullion were 96,198 net tons in 1899 and 111,962 net tons in 1900, of which 75,727 and 99,094 tons respectively were exported. In this branch, too, the movement really means that we are doing a very large smelting and refining and desilverizing business. Of the total quantity of lead imported 89,301 net tons came from Mexico and 18,845 tons from Canada.

The rapid increase in the value of the imports of tin is, of course, due primarily to the high prices in recent times. In 1898 the imports amounted to 62,748,399 pounds. They were 71,248,407 pounds in 1899 and 69,068,568 pounds in 1900.

In conclusion it may be of interest to note that our coal imports increased from 1,270,557 tons in 1898 to 1,400,461 tons in 1899 and 1,909,258 tons in 1900, the bulk, of course, for the Pacific Coast. British North America contributed 837,858 tons, 1,010,700 tons and 1,484,576 tons respectively in 1898, 1899 and 1900.

It is reported that Chamblin & Scott, a well-known firm of foundrymen and machine manufacturers of Richmond, Va., are planning the erection in the city of a large shipbuilding plant.

## The Threatened Complications in Our Trade with Russia.

In our issue of January 17 we printed a letter which we received from W. L. Saunders, vice-president of the Ingersoll-Sergeant Drill Company, relating to the proposed duty on beet sugar imported from Russia and its retaliatory effect on the exportation of American machinery to Russia.

Since the publication of this letter a great deal of indignation has been expressed in the machinery trade over the proposed measure, and a strong effort is now being made to prevent its adoption. Briefly stated, the measure will empower the Secretary of the Treasury to shape a duty of 140 per cent. against Russian beet sugar. Should this be done it is almost certain that the Russian Government will retaliate by imposing a duty on American machinery and manufactured goods which are at present admitted into certain ports of Russia free of duty. The beet sugar referred to is also admitted into this country without duty. The beet sugar on one hand and the machinery and manufactured goods on the other are on the free lists of the two countries by virtue of a reciprocal or "favored nation" clause of the Dingley tariff bill. During the fiscal year ending June 30, 1899, the total importation of this beet sugar into this country amounted to \$340,000. During the same period this country sold to Russia manufactured goods amounting to \$10,000,000. It is also held that during the first ten months of 1900 we exported to Russia manufactured goods to the extent of \$9,440,000. These figures refer only to the goods sold direct and going into Russia via Baltic and Black Sea ports, and take no account of the millions of dollars' worth of goods shipped into Russia through England and Germany.

Another phase of the matter that is being considered very seriously by certain machinery builders in this country is that Russia now has in the United States orders for several million dollars' worth of goods. These orders are only partially completed. They were made under the present tariff regulations and did not provide for any change. Consequently if Russia sees fit to place a tariff on the goods before the time comes when deliveries can be made a loss will be entailed on the American manufacturers.

Mr. Saunders is most actively engaged in opposing the proposed act, and the matter is now receiving the attention of the National Association of Manufacturers. The manufacturers on the Pacific Coast are vitally interested in the outcome of the affair, and they are joining with the National Association of Manufacturers in their effort to have the Treasury Department abandon the plan to abrogate the clause in the present reciprocal treaty.

These combined efforts have been successful thus far, inasmuch as the Secretary of the Treasury has stopped to look into the matter carefully. The legal points involved are so complicated that he has asked an opinion of Attorney-General Griggs. It is probable that no action will be taken, at least until after the adjournment of Congress, in view of the desire of the administration to secure ratification of the commercial treaty with Russia. This treaty simplifies and defines some doubtful points which have arisen under the treaty of commerce and navigation ratified in 1833. The Russian Government is considerably exercised over the probability that the countervailing duty may be levied while the treaty is pending. It has been represented in dispatches received by Russian representatives in this country that after the delay which has already occurred in sending the treaty to the Senate it would be regarded as something of an affront for the countervailing duty to be imposed on Russian sugars. Intimations have been conveyed to the State Department that the maximum tariff would be promptly imposed in Russia upon imports from the United States, resulting in rates 25 or 30 per cent. higher than those now in force under the reciprocal agreement of 1833. The new treaty was negotiated about a year ago and was taken to St. Petersburg by the Russian financial agent here, where it was cordially

accepted by the Emperor and the Minister of Finance. It is stated that this Government asked a delay, apparently with a view to the approaching Presidential election. This was promptly granted, so far as the Russian Government could control the matter, but it is now felt that their courtesy should not be made an excuse for levying a discriminating duty against Russian sugar.

With a view of presenting the facts of the case, together with a full explanation of the manner in which the Russian Government controls her sugar production, Mr. Saunders called on Secretary Gage recently. He also brought up the immense disadvantage at which the machinery manufacturers of this country would be placed in giving so slight an advantage to the sugar interests.

The beet sugar interests and also the sugar refining interests of this country are very positive in their statements that Russia pays indirectly an export bounty on sugar, and that therefore Russian sugar is subject to a countervailing duty. On the other hand, the manufacturers who are opposing the impost of such a countervailing duty are positive that no bounty whatever is paid, either directly or indirectly. The Russian Government has officially reported to this Government that no bounty, or the equivalent of a bounty, is paid, and this official action should, the manufacturers claim, be accorded the respect such announcements warrant until a thorough investigation has proved it untrue. The manufacturers charge that the agent who, for the Treasury Department, investigated the system under which the Russian sugar is exported did not, as a matter of fact, go to Russia. A letter has been forwarded to Secretary Gage by the National Association of Manufacturers, asking that an official investigation be made by having a proper official representing the Government sent to Russia. The association have offered to also send a representative, and they suggest that the sugar interests of this country do likewise. The expense, except in the case of the Government, it is suggested, is to be borne by the manufacturers and the sugar interests. The plan, then, is that these three representatives could either collectively or individually submit a report of actual facts, and the Secretary of the Treasury would be in a position to give an intelligent and absolutely fair decision.

**The Banner Iron Works.**—Ground has been broken on a lot fronting 395 feet on Shaw avenue and having a depth of 300 feet on St. Louis, Oak Hill and Carondelet Railway for the Banner Iron Works, having office at 715 Locust street, St. Louis, Mo. This company will enter into the manufacture of general architectural and structural iron and steel work. Drawings for the complete plant are now under way, and it is their purpose to have the entire equipment designed and suitable for rapid work. A foundry will be in connection with the finishing shop, the foundry to have a cupola capacity of 8 tons per hour, and in addition to being equipped with electric traveling cranes, will doubtless have labor saving hoists for the individual molders. The power to be used about the entire plant will be electric, bids for this equipment now being received. The president of the new company is A. G. Fish, who has just resigned the vice-presidency of the Koken Iron Works. With him are associated as vice-president Chas. W. Koppen, formerly foundry foreman; H. A. Frielingsdorf, treasurer, of the engineering department, and E. C. F. Koken, secretary, son of the late W. T. Koken. All the officers of the new company were, until recently, in the service of the Koken Iron Works. Articles of incorporation have been applied for which place the capital stock at \$35,000.

The January fire loss of the United States and Canada kept up the excessive ratio established during 1900. According to the *New York Journal of Commerce* it reached a total of \$16,574,950, as compared with \$11,755,000 in January, 1900, and \$10,718,000 in January, 1899. As in all the important fires last month the property was insured to its full value, the underwriters suffered severely and the outlook for their business is far from encouraging.



### The Lunkenheimer Standard Injector.

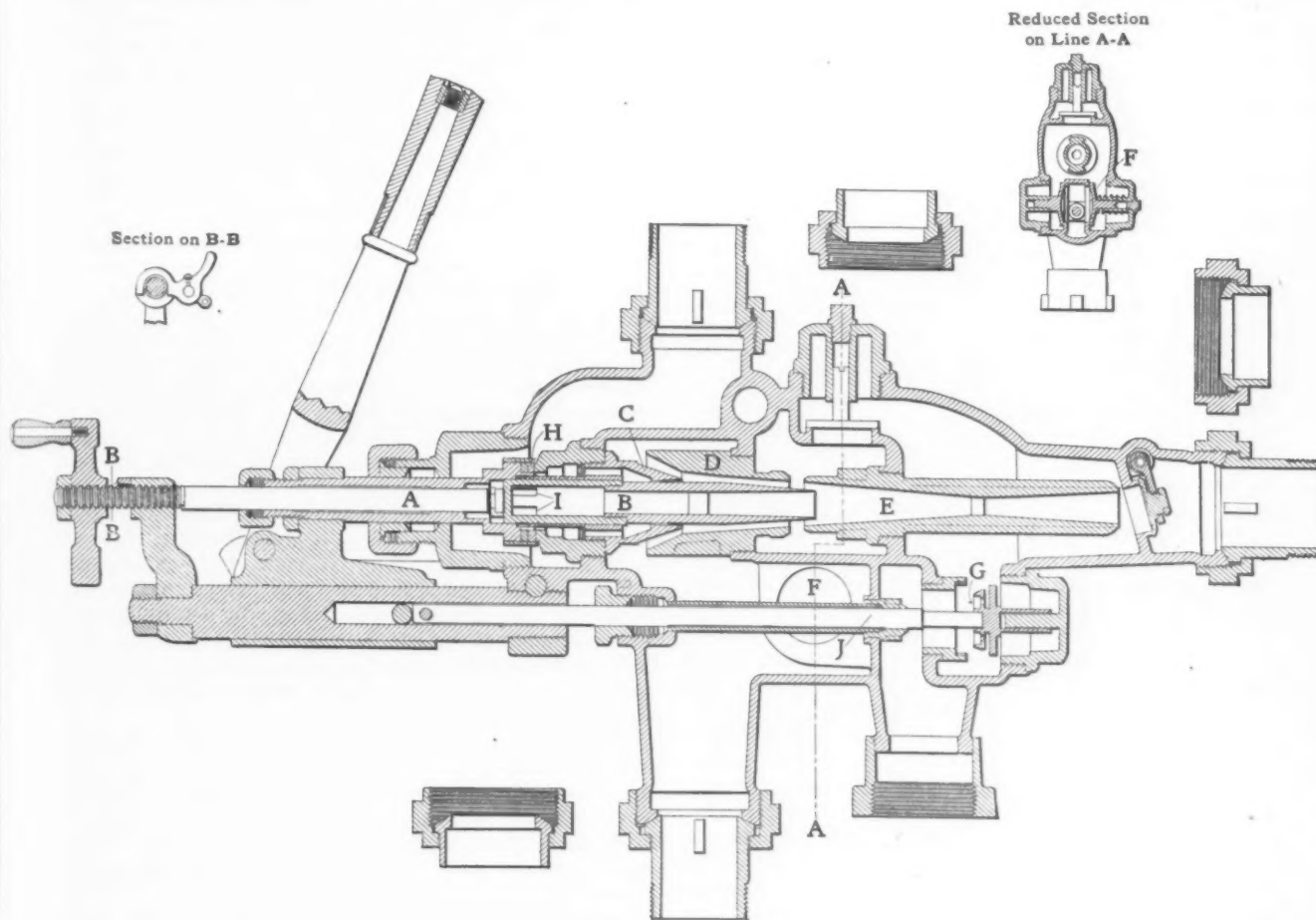
Sectional views are here presented of the new No. 99 standard injector, designed by the Lunkenheimer Company of Cincinnati. Upon reference to the large drawing it will be noted that pulling the lever slightly the steam valve H is withdrawn from its seat and steam admitted to the lifting steam jet C, through the annular space around the movable steam tube B. The steam flowing into the water lifting tube B forms a vacuum in the water supply pipe and the water is lifted and passes out through the check valve A, and also the delivery tube E, past the overflow valve G to the atmosphere. Drawing the handle further back opens the ports I in the movable steam tube B, thus admitting steam to the interior of the tube, which forces the water through the combining tube E past the line check to the boiler, due to the

next, the object being to present the resources and attractions of the Southern States before Northern investors in the most complete manner possible. The association is also arranging for a series of special excursions from Northern cities to various points in the South, beginning with one from Philadelphia to New Orleans, by way of Louisville and Memphis.

### Notes from Great Britain.

#### The Iron and Steel Market.

LONDON, February 2, 1901.—No material change has taken place since my last dispatch. Prices have still a downward tendency, the buyers are still scarce, while both in Britain and Europe it is the same story of overproduction, diminishing demands and falling prices. Add to this a growing uneasiness in the labor market,



THE LUNKENHEIMER STANDARD INJECTOR.

closing of the overflow valve G, occasioned by the withdrawal of the rod J. The principal feature in this machine is that the regulation of the water is accomplished by the movement of the movable steam tube B, the extent of which is controlled by the crank handle at the end of the machine. On this account it differs from other forms of injectors, inasmuch as in cutting down the discharge of water the steam consumption is reduced in direct proportion. In other forms of injectors the steam supply remains constant, while the water supply alone is reduced. The manufacturers claim for the injector that it will start promptly under most conditions and can be depended upon to work reliably at all steam pressures from 25 to 300 pounds and higher. They further claim that it is distinctively a high pressure injector designed particularly for that service. It is also self adjusting, that is to say, it is not affected by variations of steam pressures, even within great limits, and when started, for instance, at 70 pounds, it can be relied upon to work uninterruptedly to 300 pounds, and a sudden reduction in steam pressure would not disturb its action.

The Southern Industrial Association has decided to hold a convention in Philadelphia the first week in June

and it is clear the outlook is not bright. Wages have been relatively high during the past two years and there are all round attempts now to reduce them. The Scottish steel makers are going before the Conciliation Board asking for a reduction in wages of 5 per cent., while the malleable iron makers are discussing a similar proposal. In the coal trade a reduction of wages is being asked for in all our coal fields. The Cleveland ironstone miners have already agreed to accept a reduction of 6¼ per cent. Pig iron warrants have declined from 36 to 48 cents per ton. The attempt of the Cleveland ironmasters to maintain the price of No. 3 at \$12.50 has failed and the price is now down to \$11.75, while Cleveland warrants are selling at \$11.25. The most noteworthy event of the week in the metal market, however, has been the return for November and December of the accountant of the Board of Conciliation for the manufactured iron and steel trades of the North of England. The net selling price of rails, bars, plates and angles is given at \$41.50. The striking feature is the abnormal fall in production. The output for November and December is almost the smallest on record since the Board of Conciliation came into existence. The total was 16,744 tons, a drop of 11,000 tons on the previous two months.

These figures are quite typical of the state of trade throughout.

#### Profits and Trade.

The report of Henry Bessemer & Co. indicates clearly enough the doubts entertained by large steel makers as to the near future of the British steel trade. The profits for 1900 amounted to \$100,000, bearing dividend at the rate of 12½ per cent. The directors in their report say that in consequence of the abnormal prices of raw material, especially fuel, the works, in sympathy with the general curtailment of orders in the heavy steel trade, are not at present fully employed.

#### British Steel Makers and the German Tariff.

The annual meeting of the Sheffield Chamber of Commerce, held at Cutlers' Hall, Sheffield, last Wednesday, assumes exceptional importance because of the threatened increased tariff in Germany upon imported steel, most of which comes from Sheffield. The situation is best summed up in a letter read at the meeting from one of the Members of Parliament for Sheffield. As the United States is affected as well as Great Britain, I make two quotations from the letter in question. The first has reference to the German tariff and the second is a statement of the prevalent view in regard to American competition:

"On the question of the proposed German tariff the opinion which the report seeks to elicit from members of the chamber can surely be of only one kind. Any proposed German crusade against British manufacturers will be deterred only by considerations of purely German interests, and the most immediate and material of all German interests would be that of avoiding retaliation against German exports. Demands for retaliation must in this country come from the mass of the workers, who may some day make up their minds that the interest of all of them as producers in sending duties up for the salvation of the trade of some of them is stronger than the interest of them all as consumers in keeping duties down. Such a demand, if it comes, will be too strong to be engineered by fair trade societies or restrained by Cobden clubs. It must be borne in mind that any new German tariff aimed at excluding foreign steel from Germany will take effect not only against British steel, but also against the rapidly increasing steel trade of the United States. That in such a case the United States would not threaten retaliation it is difficult to believe. The parting of the ways for us would come if, and when, by such a threat the United States had secured for themselves a separate arrangement with Germany. . . . With regard to the future of the trade generally, it seems that the most formidable prospect is the growing development of American competition in steel. If we are to believe our American friends themselves, their enterprising methods and their gigantic combinations for economizing production are going to sweep the seas and annex the commercial world. I doubt whether British skill and enterprise are going to capitulate so easily as has been foretold. I cannot believe that a few years of prosperity have so calamitously enfeeble! the ingenuity which centuries of liberty had bred in us."

While retaliatory measures are thus threatened by Sheffield manufacturers, there is, of course, not the slightest probability that British merchants will change their views in regard to the free trade policy of this country.

#### American Tin Plate Bars in Wales.

The reference in *The Iron Age* of January 17 to American tin plate bars in Wales, in which emphasis is laid upon the success of American tin plate bars, is still further emphasized by the report issued by Sim & Coventry of Liverpool, which has just been issued.

Last September out of 20 tin plate bar mills nine were idle, nine partially employed and only two fully employed. This result is entirely attributed to the importation of American bars. A difficulty was at first experienced because American makers sent these bars in unwieldy lengths. The chief drawbacks alleged in the matter of American bars are stated to be stringent terms of payment and the impossibility of getting prompt delivery or varied specifications.

#### Shipbuilding and Steel.

The returns for 1900 show that during the past year, exclusive of war ships, 692 vessels, of 1,442,471 tons, were launched in the United Kingdom, and of this number all were steamers except 28 vessels which only aggregated 9871 tons. Lloyd's report says: "As regards the material employed, over 99.1 per cent. of the tonnage has been built of steel and less than 0.8 per cent. of iron. Of the total output 1,102,551 steam tons and 6614 sailing tons, or 1,109,165 tons in all (nearly 77 per cent.), belong to ports in the United Kingdom."

We are further informed that, "irrespective of war ships, the total tonnage under construction in the United Kingdom on December 31, 1900, was less than that under construction 12 months previously by about 36,000 tons, or 2.7 per cent. At the present time 1,269,919 tons (1,256,119 steam, 13,800 sail) are under construction in the United Kingdom. The highest figures recorded in the history of the shipbuilding industry occurred in December, 1898, when 1,401,087 tons were reported to be under construction. Compared with these figures, there is at the close of 1900 a reduction of work in hand to the extent of 130,000 tons. It should be added that the war ship tonnage under construction in the country reached in March, 1900, a higher total than any that has previously been recorded by Lloyd's Register."

S. G. H.

### The Reciprocity Treaties.

WASHINGTON, D. C., February 12, 1901.—The possibility that an extra session may be called has aroused interest anew in the reciprocity treaties which have been pending in Congress for nearly two years, but none of which have yet been acted upon. Several of them, notably the French treaty, are of special interest to the iron and steel trade. The course of the Administration as to these conventions was outlined some weeks ago, when it was thought that no extra session would be held. In view of the extreme indifference exhibited regarding them by the majority of leaders in both Houses, it was practically determined not to seek the extension of the treaties if during the closing days of the present session it should become apparent that no effort would be made to reach a vote even on the French treaty.

The discussion of the possibility of an extra session, however, has so changed the aspect of affairs that the Administration's decision may be modified. Commissioner Kasson and other officials of the State Department have freely expressed the opinion that the President could not with dignity ask the foreign powers to extend these treaties again in view of the scant courtesy shown them in the Senate. It was also felt that even if the treaties were extended for another year they would again expire in February and March of 1902, and therefore would have Congressional attention for but or three months, much too short a time for their discussion in committee, their ratification by the Senate, and the passage by both Houses of the necessary joint resolutions to make them operative.

The calling of an extra session would very materially change the situation regarding these treaties if extended. It would be practicable to take them up at once in the Foreign Relations Committee of the Senate and to report to the Senate with little or no debate such of the conventions as have already been fully canvassed. The French treaty, for example, with its important iron and steel interests, has already been reported, and there would be no delay in bringing it out of committee at a new session. Thus a month or two would be gained in advancing the conventions and they could all be placed upon the Senate executive calendar before the adjournment of the special session.

Important changes in the *personnel* of both Houses in the new Congress indicate the probability of the modification of the general feeling toward the treaties, and hence the prospect of their ratification would be materially improved. The conviction of the majority leaders in both Houses that radical steps of some kind must soon be taken by the United States to find markets for



its constantly increasing surplus of natural and manufactured products emphasizes in their minds the importance of making a thorough practical test of the reciprocity policy, even though no guarantee can be had in advance as to the benefits to be derived. The impression is also gaining ground that it might be decidedly advantageous to the United States should other European powers insist upon the negotiation of treaties similar to those now pending, and hence the opposition to the French and other conventions on the ground that the "most favored nation" clause of our commercial treaties would compel us to grant similar concessions to other countries is rapidly dwindling.

It is a very delicate task, beset with numerous diplomatic difficulties, for Administration officials to ascertain, without committing the President, if these treaties can be extended in the event of the calling of an extra session. Nearly all the conventions will expire with the present session, and it might be necessary in order to extend them that action should be taken before the question of an extra session is positively determined, unless indeed the President has already made up his mind to call Congress back. It is thought these difficulties can be surmounted, however, and the possible future movements concerning these important conventions lend an additional interest to the outlook for an extra session.

In this connection considerable speculation is being indulged in as to whether the treaty with the Argentine would be revived in the event of an extra session. While no formal action has been taken upon it, it has been generally conceded that its fate was sealed because of the reductions in duty on low grade Argentine wool and on hides which it carried. In the two years since the treaty was negotiated, however, there has been a marked change in public opinion concerning the maintenance of high duties on these two items. It is believed, however, that if the Argentine treaty should now be revived it would stand an equal chance at least with the other conventions for ratification.

The prospect for an extra session will continue to improve while the present slow rate of progress in disposing of the appropriation bills in the Senate is maintained. They are now being acted upon at the rate of one a week, and as half a score yet remain to be considered, only the utmost expedition will suffice to secure their passage. The fight on the ship subsidy bill, which has overshadowed all other attempted legislation at this session, continues to threaten the defeat of several of the appropriation bills, and it is generally conceded that if any of them should fail the President would summon an extra session. The majority leaders are working industriously to prevent this result, but as yet can see no daylight ahead.

W. L. C.

### Production of Tin in Bolivia.

The following is taken from the January bulletin of the Bureau of American Republics:

The August, 1900, number of the Monthly Bulletin contains a notice of the pamphlet recently published at La Paz, entitled "Tin in Bolivia," under the joint authorship of Manuel V. Ballivian and Bautista Saavedra. Mr. Ballivian is Director of the Bolivian Bureau of Immigration, Statistics and Geographical Propaganda and an honorary corresponding member of the International Union of American Republics. Bautista Saavedra is professor in the law faculty at La Paz. Mr. Ballivian has also prepared, in collaboration with other scientists, monographs on gold and copper in Bolivia, and has under preparation two more works on silver, and papers on the geology of the country.

Mr. Ballivian says, in the above mentioned publication, that the Bolivian tin mines are situated about 14,000 feet above sea level, between 16 and 21 degrees south latitude in the Departments of Oruro, Potosi, La Paz and Cochabamba. The quality of the tin varies according to the location of the mines. There are several reasons for this: First, the geological state of the ore. Sometimes the ore is found in an isolated state in a character nearly pure. Sometimes, on the contrary, as

at Oruro and Potosi, it is found at a certain depth mixed with silver ores or iron pyrites in the proportion of 5 to 20 per cent. It is in washing the silver that tin of a generally inferior quality is obtained as a subsidiary product.

It is also found sometimes in the form of palla, or of very compact metal, or again in the form of llampu, or small metal mixed with clay. In the first case the tin so obtained will be rich; in the second, on the other hand, on account of its alloy, it will fluctuate between 10 and 15 per cent. The degree of pure metal in this ore is very unequal in the different deposits. Compared with the insignificant regions like those in Cochabamba, the tin mines in the districts of Potosi, and especially in Oruro, are of much greater importance. Of 37 veins which are actually being developed in Bolivia, 25 are found in this last named department.

In Oruro the mining machinery used is much superior to that employed in the other departments. It is at Huanuni, the most important of the Bolivian tin mines, that the methods of working are the most perfect. With the use of more modern machinery the production of barilla will reach 6000 quintals per month. The Antofagasta railway is another great advantage for this district, thanks to the great saving in transportation expenses. It is due to this fact that the Department of Oruro contributes a large third of the total exports of ores, which have considerably increased in the last half century.

In 1846 the export of tin barilla amounted to 920,000 kg. During the period from 1846 to 1897 the yearly average rose to 1,824,550, and in 1899 the total exports were 5,240,455 kg., of which 3,339,995 were barilla. According to the official figures communicated by the Customs Bureau to the Statistical Bureau of La Paz, the exports of tin ore reached 2,346,000 kg. during the first quarter of 1900, which, if maintained during the year, will give a value double that for 1899.

"The county of Cornwall, England, has already been practically exhausted, and if its mineral yield continues to increase, the day is not far distant when the Republic of Bolivia, which can yearly produce as much as 100,000,000 kg. of this ore, will rival the Dutch East Indies and Australia, which are at present the most important tin producing countries."

But in order to obtain this result there are many difficulties to be overcome and numerous obstacles to be surmounted. First of all, the means of transportation must be enlarged and cheapened by an increase in the ways of communication, which at present are wholly inadequate to meet the demands. On the other hand, the mine owners or their engineers should have the machinery of their establishments rejuvenated. Foreign capital should be enlisted. The increase in the price of tin alone, from £85 to £152 per ton, during the last 50 years should be sufficient to attract the attention of capitalists to a region where tin is so plentiful.

The extraction and exportation of tin ore in Bolivia were exempt from fiscal charges until June, 1863. But the law of September 12 of that year subjected the exportation of tin bars and barilla to special taxes of 10 and 5 centavos per Spanish quintal (46 kg.), respectively. In 1890 the great development of the industry brought about the law of October 25, which raised the rates to 50 and 35 centavos. Finally the Government promulgated, May 26, 1899, a decree which raised the tax on tin in bars to 1.60 bolivianos and that on tin ore barilla to 1 boliviano per quintal.

The duties collected by the Bolivian custom house on the exports of bismuth and tin during the decade 1889-1899 are shown in the figures given below. The sextuple increase in these taxes at the end of ten years is another eloquent demonstration of the continued development of this industry.

Bolivianos.*		Bolivianos.*	
1889.....	19,000	1895.....	37,440
1890.....	20,000	1896.....	35,800
1891.....	21,000	1897.....	67,730
1892.....	23,000	1898.....	80,000
1893.....	25,400	1899.....	120,000
1894.....	31,960		

\*A boliviano is worth \$0.468 United States currency.

### The Fraser-Talbot Gas Producer.

The ordinary gas producer, as at present constructed, consists of either a circular or rectangular chamber, either made of plate iron casing lined with fire bricks or of brick walls tied and bound together with buck stays and tie rods. In this casing there have been arranged various forms of grate bars to support the coal which is being gasified, or the combustion takes place on the bed of ashes supported by the bottom of the producer. In some cases rotary bottoms have been introduced with a view to facilitate the discharge of the ashes and to provide for a greater capacity for gasifying the coal. None of these arrangements, however, have proven perfectly satisfactory, and the continued demand for a mechanical gas producer has led to the development of the Fraser-Talbot producer, here shown, the exclusive manufacture and sale of which is controlled in the United States and Canada by the Wellman-Seaver Company of Cleveland, Ohio. The producer consists of a cylindrical shell or casing riveted to four I-beam columns which rest upon foundations and support the shell and the operating machinery. It is not connected in any way to the building in which it is placed. To the lower part of the shell is attached a conical cast iron fire pot, the lower edge of which is covered by water in a concrete ash pan, thereby forming a water seal. In the center of this ash pan is a hollow cylindrical column, terminating at its upper end in an inverted cone. The annular space between the edge of the cone and the cylinder and the opening in the top cone, which is protected by the circular flange, form outlets for the blast, which is conveyed to the central column by means of a circular inlet pipe on one side of the producer, this inlet pipe being provided with a force blower, preferably of the injector type. The inverted cone forms a bearing for the vertical water cooled shaft, to which are connected two water cooled arms, one arm being inclined at the angle shown, and the other arm extending in a horizontal direction and at right angles to the shaft. The combination of the shaft and the arms forms a mechanical stirrer or agitator. The shaft has a combination of rotating and vertical motions, which are effected by means of gearing connecting the shaft to an electric motor. This motor and the gearing are carried on a steel platform, riveted to the tops of the supporting columns and well braced to them. The gearing for giving the vertical shaft the rotary and vertical motions is of an exceptionally heavy and massive design and in general consists of a train of spur gears reducing the motion from the electric motor to a worm wheel, which is connected to the upper end of the vertical shaft by means of a feather and groove. The latter provide for the vertical motion of shaft, which is effected by means of two cranks on a horizontal shaft directly over the vertical shaft. These cranks are connected to a cross head, through which passes the vertical shaft. The cross head is connected to the vertical shaft by means of two collars, between which is placed a powerful spiral spring. The arrangement of the gearing is such that the vertical shaft has a slow rotating and vertical movement, and if at any time the shaft should become jammed against an excessively large and hard clinker the vertical motion will cease automatically until the arm which is in contact with the clinker moves through a segment of a circle and past the clinker, when it will be forced down into its proper position by the spiral spring. This allows a slight elasticity in the movement of the shaft, and will prevent the breakage of the arm. As a further safeguard, a slip clutch is placed on one of the gear wheels. In practice, however, it is found that the combined rotary and vertical movements prevent the formation of any large and hard clinkers.

The producer is fed through two hoppers, either in the ordinary way, as shown by the drawing, with bells and lids to the drums or hoppers, or the feeding may be effected by means of a Bildt or any other approved form of feed. In one plant, which is now being erected in the United States, the coal is fed directly down to the hoppers from overhead bins. In another case the coal is spouted to the hoppers through chutes leading from the source of supply.

Among the many advantages of this form of gas producer is the doing away of the severe and continued labor of poking the fire, an operation which is extremely difficult to maintain in a steady and uniform manner, and any irregularity in which causes a corresponding irregularity in the quantity of the gas produced. The poking being entirely mechanical, it is done in a proper and thorough manner without reference to any manual labor, and as a consequence the quality and quantity of the gas produced is very uniform. Tests show that it requires a less amount of coal to accomplish the same work with this producer, on account of the uniform quality of gas, than by other types of producers. A careful

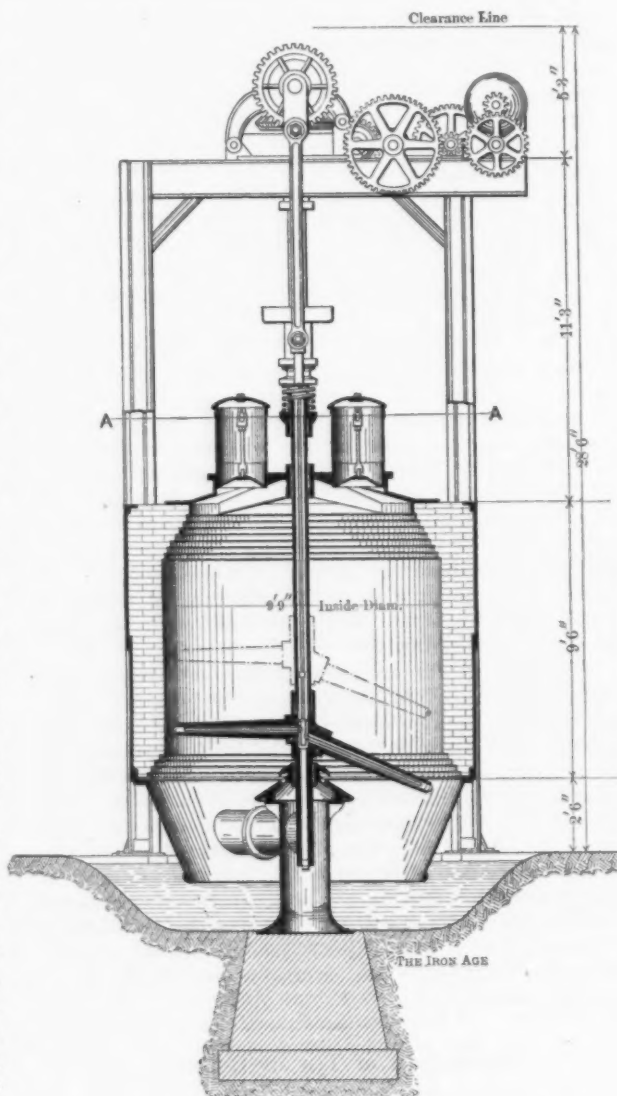


Fig. 1.—Section on Line B B of Fig. 2.

### THE FRASER-TALBOT GAS PRODUCER.

series of records extending over some months has shown that this producer in actual work will gasify from 2500 to 3000 pounds of coal per hour, with no other expenditure of labor than that necessary for regulating the supply of coal and removing the ashes. One of these producers has ample capacity to run a 50-ton melting furnace continuously.

The entire producer has been designed with especial reference to severe and continued work. The construction throughout is exceptionally strong and simple. Every part has been arranged with reference to its ready removal and replacement. This is best illustrated in the arrangement of the gearing, where any shaft can be removed without disturbing any other shaft. Each producer is self contained and constitutes an independent unit, and it is with this object in view that each producer has been supplied with its individual electric



motor and gearing. The motor is of ample power to force the pokers steadily and surely through the coal which is being gasified and to break up clinkers of any ordinary character. The actual power, however, consumed in the operation of this producer is from 3 to 4 horse-power. A series of experiments with the mechanical gas producer have been going on in some of the large steel works in this country the last three or four years with very satisfactory results, and the Fraser-Talbot mechanical gas producer is the result of these experiments, and embodies the best features of all the various kinds which have been experimented with.

### Abandoning Iron Ore Stock Piling.

It is stated that the Oliver Iron Mining Company, owners of the Norrie mines at Ironwood, Mich., have

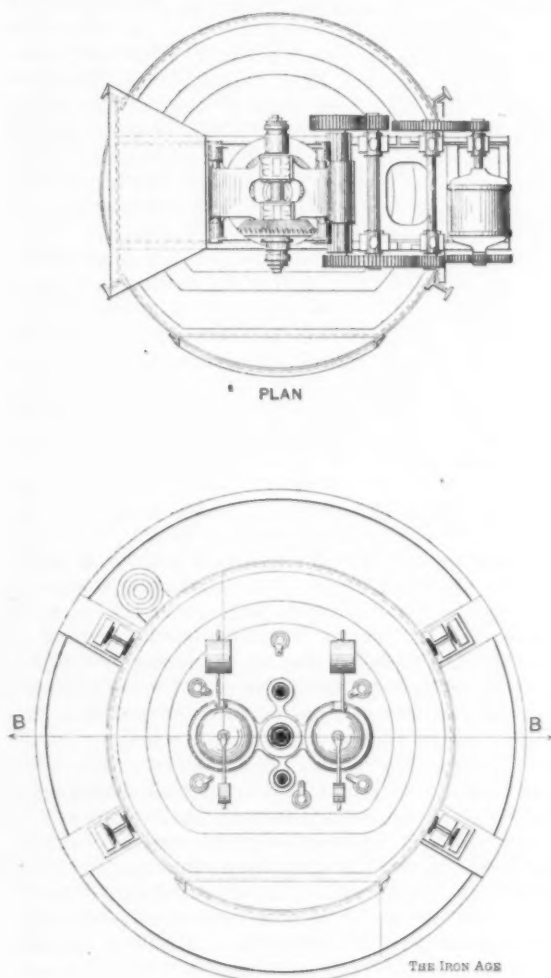


Fig. 2.—Section on Line A A of Fig. 1.

### THE FRASER-TALBOT GAS PRODUCER.

practically done away with the system of stock piling, which has been in vogue at all the mines of the Lake Superior country ever since the first one was opened.

Heretofore the principal work at the mines during the winter months was the hoisting of large quantities of ore to the surface and depositing it in huge piles, to be loaded upon the cars with steam shovels at the opening of the shipping season. This winter, however, the Oliver Company have done practically nothing in the way of stock piling, but have confined their work to opening up the mines underground and putting them in such shape as will render possible the hoisting of a large quantity of ore the coming summer.

The reason for this change in the system is that the stock piling of the ore necessitated its handling twice, and in many cases ore that had been stock piled during the winter months was found to be so solidly frozen in the spring that it was necessary to use dynamite to loosen it before it could be loaded onto the cars. It is thought that by putting the mines in proper shape large

shipments can be made without the expense of stock piling and rehandling the ore.

Another thing that may have had something to do with the change is that heretofore there were hundreds of thousands of tons of ore on the surface in the stock piles at the mines every spring. This ore has always been assessed as personal property and has greatly increased the assessed valuation of the mining properties. Under the new tax law the companies are required to make sworn statements which show the actual amount of ore in stock. The stock piles have been the principal item in the personal property valuations of the mines, and their passing will greatly lessen the assessment of the mining companies.

Dawson & Goodwin, manufacturers of and dealers in iron and brass working machinery, 39 to 41 South Canal street, Chicago, dissolved partnership February 6. The business will be continued by John H. Dawson, on the former lines, as dealer in new and second-hand iron

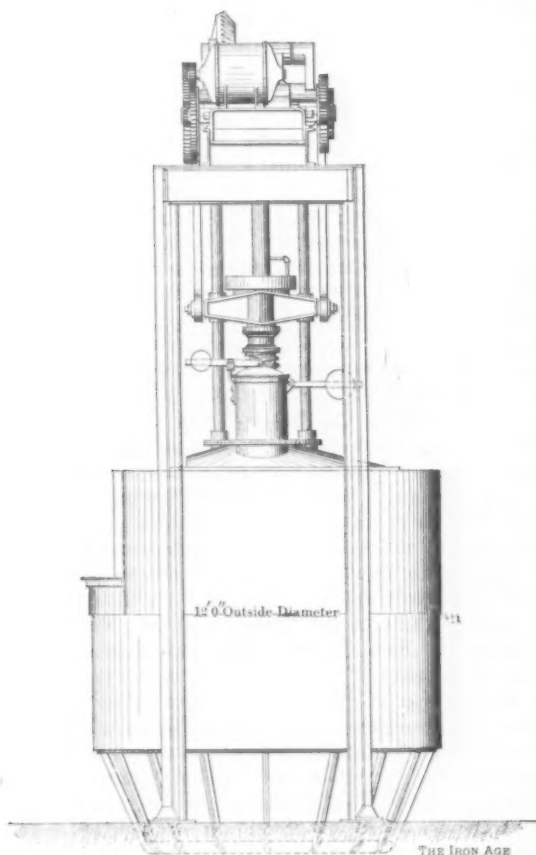


Fig. 3.—Elevation.

and brass working machinery, at the old location, with a largely increased stock to supply the trade. He has just bought from the American Bicycle Company the entire stock of machinery and tools formerly used by the Grand Rapids Cycle Company, consisting of 100 machines.

The H. K. Porter Company of Pittsburgh, builders of light locomotives, have just turned out a very peculiarly constructed compressed air engine for the Government Ordnance Department, at Iona Island, N. Y. The engine has four 30-inch driving wheels, and has a working pressure of 750 pounds to the square inch. The tanks contain 200 cubic feet of air, enabling the engine to be run for a long time without recharging the tanks.

W. J. Broatch, J. W. McDonald and J. E. Marsh have incorporated the W. J. Broatch Iron Company, Omaha, Neb., dealers in iron, steel, springs, &c., with a capital stock of \$100,000. The new company succeed to the business formerly carried on by W. J. Broatch.

### Sea Competition as a Factor in Rail Rates.

SAN FRANCISCO, CAL., February 4, 1901.—The importance of the decision in the Denver case cannot be overestimated, as that decision recognizes the existence of conditions in transportation other than those laid down by the Middle West jobbers as consonant with a strict interpretation of the provisions of the interstate commerce law. No doubt that law refers to transportation carried on under similar or like conditions and circumstances. But when it was framed conditions were considerably different from those which prevail at present. The competition between rail and sea had been partially settled. Chicago was not as big a city as it is today and the jobbers of the Middle West had not yet reached out to the conquest of a world. The opposition of the transportation companies was to the very idea of such a law. Since the law has been enforced those whose interests tend that way have been at work to obtain a literal construction, or one nearly so, of such of its provisions as seem to favor graded rates. Most of the cities of the Middle West have done their best toward obtaining such a construction of its various sections. In the Denver case George J. Kindel and the Denver Chamber of Commerce made complaint against the Atchison, Topeka & Santa Fé Railway Company that rates from the Missouri River to Denver were higher than from the Missouri River and points east to San Francisco; that rates from Denver to San Francisco were higher than from the Missouri River and points east to San Francisco; that rates from San Francisco to Denver were higher than from San Francisco to the Missouri River and points east, and that rates from Denver to the Missouri River and points east were higher than from San Francisco. The railroads urge that the competition by sea renders this necessary, and offered a large amount of testimony in support of their contention. This was in April, 1895. The matter was then submitted on briefs. An attempt at compromise was subsequently made, but the case was reopened March 10, 1900, and further testimony taken at San Francisco and Denver, when the case was again argued and submitted. The commission, after an exhaustive statement of the fact as testified to, concurred that in the case of east bound traffic it is permissible to charge a higher rate on sugar to Denver than to the Missouri River. In giving this decision the commission points out decisions in other cases in support of their action in this. In the making of the decision in question the commission allowed that water transportation was a factor to be taken into consideration in fixing the freight rate, and in doing that they admitted the whole case of San Francisco as against Chicago and the Middle West generally. The impression therefore produced on the minds of the jobbers of the Pacific Coast generally is that their legitimate contention that freight rates should be based on the principle of taking into account water competition will be allowed, and that as far as railroad transportation is concerned they will be enabled to reap the benefits naturally deducible therefrom. In making the decision referred to the commission also took other modifying circumstances into consideration. And it is therefore hoped that their decisions will generally be based as much on considerations of commercial right as upon the interpretations of the letter of the law, more or less strained, called for by those whose only rule of right or wrong is the direction to which their interests for the time being point.

As the commercial public generally may not be well acquainted with the Kindel case, it may be further stated that the plaintiff was a manufacturer of mattresses and spring beds at Denver, and his complaint was that rates, both on the raw material to Denver and on the manufactured article from Denver, were too high and discriminated against him as a manufacturer and against Denver as a manufacturing locality. Since the time when the complaint was entered many changes have been introduced in the railroad tariffs, tending to remove the causes of complaint referred to, but the general principle that sea competition must be allowed as a factor has been affirmed. Only one article was called to the attention of the commission as moving under such conditions

which would except it from any general rule in regard to east bound traffic. This article was sugar grown in the Hawaiian Islands, brought to San Francisco and shipped east. On this the rate to Denver was 60 cents per 100 pounds and to the Missouri River 50 cents. The decision of the commission was that these rates were lawful. In relation to this matter W. R. Wheeler, chairman of the Traffic Committee of the Hardware and Metal Association, says: "The Denver decision, important in itself, is doubly so when viewed as a probable forerunner of the decision in the St. Louis case. It would appear that, in compliance with the Denver decision, the maxima of intermediate west bound rates must be the sea competitive rates existing between New York and San Francisco, if the railroads continue to insist upon postage stamping the latter. For example, the rate upon a stated commodity from Chicago to Denver or from St. Louis to Salt Lake City cannot, under the decision, exceed the postage stamped sea competitive rate. Upon such commodity in force between New York and San Francisco this would very materially reduce the earnings of the transcontinental railways, and it is not unlikely that, if compelled by the courts to adopt a rate making policy consistent with the Denver decision, they would abandon the postage stamp principle in order to protect the revenues from their local and intermediate business. They certainly would be compelled to do so on commodities taking very low sea competitive rates, thereby confining such rates to cities between which such competition actually exists and giving our Pacific seaboard cities the full benefit of their advantageous geographical positions with reference to the distribution of merchandise—a consummation devoutly to be wished. And Denver has obtained the same rates to and from San Francisco as have Missouri River points."

J. O. L.

### The Saw Tooth Type of Factory.

A form of building which is growing in favor in many sections of the country for manufacturing purposes is known as the "saw tooth factory," so called from the resemblance of its roof to the shape of the teeth of a saw. It is what may be termed a one-story building, which receives its light from the roof by the arrangement of a series of small glazed roofs shaped like saw teeth. The side of each saw tooth roof, which is vertical or nearly so, is placed toward the north and contains the glass, so that it admits north light only all through the building. This is not essentially new, as the same principle of roof construction was long ago used in England in weaving sheds, and has since been copied in this country and others for the same kind of buildings. The old saw tooth roof, however, was a very small and crude affair compared with the modern construction; it was usually of wood, with little or no ventilation, and adapted for little else than weaving. The modern saw tooth roof is a development of the old wooden saw tooth, and is now built with light steel trusses, and well adapted to American conditions and climate for almost any kind of manufacturing business. In construction the roof consists of small iron trusses ranging from 20 to 30 feet span, each truss being made in the shape of a triangle and supported at each end by a small iron column. The short side of the triangle is vertical, or nearly so, and is filled with glass, facing the north; the other side of the triangle or roof truss being covered with plank or tile as a base for the finished roofing material.

The light, then, comes through the vertical sides of each saw tooth truss. The glass in the vertical side is made from 5 to 11 feet high, so that for every roof truss which covers a floor space from 20 to 30 feet wide there is a corresponding window in the roof above it that is from 5 to 11 feet high. By having the glass surface face the north the sunlight is excluded and only the pure white light from the north is admitted.

#### Floor Construction.

The floor of the building is constructed directly upon the ground, and all spaces under it are filled solid with cinders or concrete, so that there are no air spaces under the 3 inches of solid wood composing the top finish of the floor. Because of the great strength of the floor it



is economical and useful to make the partitions of a saw-tooth building of fire clay tile, and rest them directly on the top of the floor. This provision cuts off the possibility of fire traveling from one department to another. The roof is the only part of the building that is not usually made absolutely fire proof. It is usually made of mill construction instead, which is the construction recognized by the fire underwriters as a "slow burning" one and next in fire resisting qualities to the fire clay tile. There is no reason, however, why the roof cannot always be made of fire proof materials, with wire glass in the skylights. Mill construction is commonly adopted because it is usually required to keep the expense of the building within the usual amount allowed for the ordinary factory.

#### Heating and Ventilation.

In discussing the heating and ventilation of a building of this type in the *Construction News*, architects Nimmons & Fellows, who have made a careful study of the development of the saw tooth factory in its relation to American conditions and requirements, say:

With the saw tooth type of building it is possible to maintain a temperature of 70 degrees throughout winter and summer. This is accomplished by means of a combined heating and cooling apparatus; that is to say, the same apparatus which is used to heat the building in winter is also used to cool it in summer. The system used is the underground blast of heating and ventilating. This system may also be used for the ground floor of any building, and is applied to some manufacturing buildings very successfully. It is not claimed that it is exclusively adapted to the saw tooth building, but the claim is made that the saw tooth building adapts itself perfectly to the requirements of an ideal blast system of heating and ventilation. In the saw tooth building it is possible to build the heating ducts under the floor of brick and concrete and deliver the air through these from a central fan system to every part of the plant. The peculiar form of the roof and the ridge ventilators placed along the ridges of the saw tooth are means by which direct ventilation can be secured over the entire floor area. The natural tendency of the air in a saw tooth roof is to rise to the apex of each truss, and with a continuous ventilator at that point the air escapes to the outside of the building and causes a gentle current of air from the floor to ceiling. In summer the action of the sun on the roof warms the air near the ceiling, and as the ceiling is on a slant and as there is an opening at the highest point of each roof, the air is set in motion and produces a current upward over the entire building; the tendency of this current is to draw new air from the doors and windows of the side walls, if no other supply of air is furnished. The heating ducts under the floor, however, supply this demand, and cold air in summer and warm air in winter.

#### Velocity of Air Currents.

In addition to this natural tendency of an upward current of air in the building the heating system delivers the air into the building with a velocity which puts it under pressure and all the more accelerates this natural upward current in the building. In fact, the heating apparatus is so calculated and constructed as to change the air in the entire building every 15 to 20 minutes by forcing the air out of the ventilators. The apparatus is made so that any desired temperature may be maintained throughout the year. The steam pipes or coils which heat the air in winter are so arranged that cold water may be run through them in summer. The large fans in connection with the heating apparatus suck the fresh air over the heating or cooling pipes, as the case may be, and blow it along under the floor in the brick ducts to all parts of the building. Vertical branches are taken off of the underground ducts to deliver the air into the various rooms and departments. The result of this system is that the building is continually filled anew with fresh air warmed or cooled to the desired temperature.

The cost of this system of blast heating and ventilation is also very much cheaper to install and operate

than the old system of direct radiation from steam coils or radiators distributed throughout the building.

There are two great benefits to be derived from a system of perfect heating and ventilating. The first is the improved health of the employees, and second is less liability to damage in material and machinery.

In this connection it might also be mentioned that the well equipped modern plant does not stop here in its provision for the health and welfare of its employees. In addition to perfect heat, light and ventilation the complete plant will also have wash basins provided with a stream of fresh running water for each employee, individual ventilated lockers for lunch boxes and coats, lunch rooms equipped to heat coffee and warm food, hospital rooms for the sick and injured, and perfect sanitary plumbing convenient for every department of the plant. All of these features have also been added at a moderate cost in the principal saw tooth plants recently built.

#### The Philadelphia Foundrymen's Association.

The one hundred and fifth regular meeting of the Foundrymen's Association was held at the Manufacturers' Club, Philadelphia, Pa., Wednesday evening, February 6, 1901, the president, Thomas I. Rankin, occupying the chair. There was a fair attendance present, among whom may be mentioned:

Thos. I. Rankin, Abram Cox Stove Company, Philadelphia.  
James S. Stirling, Harlan & Hollingsworth, Wilmington, Del.  
E. E. Brown, E. E. Brown & Co., Philadelphia.  
W. E. Arnold, L. & R. Wister & Co., Philadelphia.  
J. Thompson, J. Thompson & Co., Philadelphia.  
D. G. Moore, S. L. Moore & Sons Company, Elizabethport, N. J.  
Thos. Hobson, *The Iron Age*, Philadelphia.  
Chas. T. Holbrook, Philadelphia.  
Wm. Dette, J. K. Dimmick & Co., Philadelphia.  
H. W. Coleman, J. K. Dimmick & Co., Philadelphia.  
H. C. Matlack, J. K. Dimmick & Co., Philadelphia.  
W. O. Steel, Gregor Mfg. Company, Philadelphia.  
A. J. Wright, Abram Cox Stove Company, Philadelphia.  
Jas. McAnally, Moore & White Company, Philadelphia.  
Asa Whitney, Philadelphia.  
Geo. W. Moore, Norway Iron & Steel Company, York, Pa.  
N. W. Shed, Thos. Devlin & Co., Philadelphia.  
C. S. Koch, Wm. Sellers & Co., Philadelphia.  
Geo. C. Davis, chemist, Philadelphia.  
C. R. Schmidt, Central Foundry Company, Baltimore, Md.  
F. C. Price, E. J. Etting, Philadelphia.  
Alfred Green, Vulcan Works, Chester, Pa.  
J. Huxley, Vulcan Works, Chester, Pa.  
W. J. Faux, Philadelphia.  
H. O. Evans, Thos. Devlin & Co., Philadelphia.  
Howard Evans, J. W. Paxson Company, Philadelphia.  
H. E. Piere, Girard Iron Works, Philadelphia.  
Fred. Stahl, Girard Iron Works, Philadelphia.  
L. A. Hickley, Davis Coal & Coke Company, Philadelphia.  
W. D. Thomas, *Iron Trade Review*, Philadelphia.  
Wm. Hanson, Pennsylvania Iron Works Company, Philadelphia.  
Thomas Devlin, Thomas Devlin & Co., Philadelphia.

The minutes of the previous meeting were dispensed with in the usual manner. The treasurer reported a balance of \$1650 on hand, with all indebtedness of the association paid. Under unfinished business Mr. Evans, secretary, presented a number of letters, replies from members on the subject of following the plan of the Pittsburgh Foundrymen's Association, in connection with its membership in the American Foundrymen's Association. Considerable interest was shown in connection with this subject and it was discussed at length, Messrs. Rankin, Devlin, Brown, Stirling, D. G. Moore and others taking part. Thos. Devlin suggested that those who desired a membership in the American Foundrymen's Association were at perfect liberty to act for themselves, but he did not consider it fair to force some of the members of the Philadelphia Foundrymen's Association into an association that they had no particular interest in and did not care to take up for themselves. Mr. Devlin then moved that the Philadelphia Foundrymen's Association should, as far as the matter of dues were concerned, continue on the present satisfactory plan. This was seconded, and on vote the motion was carried.

There being no further business before the association, the paper for the evening on the subject of "Foundry Iron," by Captain Henning, Imperial Artillery, Berlin, Germany, was presented and read. This paper was



published in full in *The Iron Age*, February 7, 1901. The paper, treating of the subject from a German ironmaster's point of view, was very interesting, and the subject was discussed by N. W. Shed, Asa Whitney, Geo. C. Davis and others. At the conclusion of the discussion a vote of thanks was tendered Captain Henning for his paper, and the secretary instructed to communicate the same, after which the meeting adjourned.

The members then proceeded to the roof garden of the club, where luncheon was served, Thomas I. Rankin acting in his usual happy manner as toastmaster. A. J. Wright made an interesting speech on the subject of "Opportunities, How and When to Take Them." D. G. Moore in a few remarks commended Philadelphia on her workmen and on the class of workmanship performed. Dr. E. E. Brown and others also responded to the call of the toastmaster, after which the social session came to a close.

English Wages and Hours of Labor.

The *Colliery Guardian* analyzes the English labor statistics and notes the rising wages during 1900. The upward movement began in the autumn of 1895 and continued without break throughout the four succeeding years, culminating in 1900 in advances exceeding in their total amount anything recorded in any recent year. Although there was a slight falling off during 1900 in the total number affected, as compared with the previous year, the computed net amount of increase in weekly wages was more than twice the total for 1899. If the total advance in 1900 were spread over the total number employed the average advance would equal about 6 pence per head per week. During the later months of 1900 the rapid advance in wages received some check. In certain industries decreases took place which are in part disguised in the statistics by the increases which took effect in the early part of the year. For example, the manufactured iron workers in the West of Scotland, after receiving five successive advances, sustained a decrease in November. The total computed amount of the increases in weekly wages is £207,790, and of the decreases £4550. In Table I the distribution of the net advance of £203,240 over some of the principal industries is shown:

<i>Table I.</i>				
	Work people affected by changes in rates of wages.		Net increase on weekly wage of those affected by changes.	
Trades.	Number (separate individuals).	Percentage of total number employed.	Total amount. £	Average per head. s. d.
Coal mining.....	679,000	95.0	163,870	4 10
Other mining and quarry- ing .....	19,600	13.3	3,240	3 3½
Iron and steel.....	70,000	8.6	14,440	4 1½
Engineering and ship- building .....	9,400		760	1 7½
Miscellaneous metal....	15,200		790	1 0½

Of the total advance of £203,240, 80 per cent. went to the coal miners. Almost all the work people employed in the industry received increased wages, the average advance being nearly 5 shillings per head per week. The extent of the movement in the coal trade is well brought out in Table II, which compares for each of the principal districts the level of miners' wages at the end of 1900 with their level a year ago, five years ago and ten years ago:

	Table II.			
	Percentage of coal hewers' wages above standard at end of—			
Principal districts.	1890.	1895.	1899.	1900.
Northumberland .....	31.25	7.50	25.00	61.25
Durham .....	30.00	15.00	33.75	65.00
Federated districts.....	40.00	30.00	40.00	50.00
South Staffs. and East Worcester .....	40.00	30.00	40.00	50.00
South Wales and Monmouth..	52.50	12.50	30.00	73.75
Scotland, East.....	50.00	12.50	53.75	97.50
Scotland, West.....	50.00	12.50	56.25	100.00

During 1900 the increases were greatest in Scotland and South Wales. It will be seen that in 1900 the advance in each of these districts was 43¼ per cent. on

standard. The advances in Northumberland and Durham were 36¼ and 31¼ per cent. on their respective standards. In the federated districts the advance was 10 per cent., but during the year it was arranged that a further 10 per cent. should take effect in two installments at the beginning of 1901.

Next in importance to the changes in the coal mining industry are those in the iron and steel trades. The total advance in these industries was £14,440 per week, or slightly more than 4 shillings per head of the 70,000 work people affected. The rise in wages in these trades commenced in 1896, before the improvement in the mining industry, and has kept pace with it. Altogether during the last five years the computed total increase in the weekly wages of iron and steel workers amounts to £33,420, which divided among the 80,000 work people affected by changes during that period gives an average increase of about 8 shillings 4 pence per week.

In Table III the net percentage increase or decrease in each year during the last ten years is shown in the wages of certain bodies of blast furnacemen, manufactured iron workers and steel workers. The wages in each case are regulated by sliding scales and vary automatically with the ascertained selling prices of the commodities manufactured.

Year.	Blast furnacemen.		Iron workers (millmen).		Steel workers.	
	Cleveland and Durham.	Cumberland.	North of England.	Midlands.	Consett.	Eston.
	1891 .....	1891 .....	1891 .....	1891 .....	1891 .....	1891 .....
1891 .....	-11¼	-11¼	-5	-5	-12½	-15½
1892 .....	-¾	-¾	-2½	-2½	-2½	-2½
1893 .....	-6	-3¾	-5	..	-7½	..
1894 .....	+1	-1¼	+2½	-5	..	-5¼
1895 .....	+3¾	+2½	..	..	-2½	+¾
1896 .....	-1	..	+2½	+2½	+5	+6¾
1897 .....	+3¾	+1¼	..	..	+2½	+¾
1898 .....	+¾	+13	+2½	+2½	+2½	+¾
1899 .....	+20¾	+27¼	+12½	+12½	+10	+10¼
1900 .....	+18	+9	+17½	+22½	+12½	+1
Net increase compared with ten years ago...	+28½	+35½	+22½	+27½	+7½	-3½
Five years ago...	+41¼	+50½	+35	+40	+32½	+19½
A year ago...	+18	+9	+17½	+22½	+12½	+1

It will be seen that the wages of the blast furnacemen show the greatest fluctuations and those of the steel workers the least. The scale regulating the Eston steel workers provides for a maximum above which wages shall not be raised. That point was reached in January, 1900, and accordingly no further advance has been given.

With reference to the changes settled without strikes the increased proportion settled by conciliation boards, mediation and arbitration is noticeable. This is mainly accounted for by the establishment of a Conciliation Board for the Coal Trade of Scotland and the re-establishment of the Northumberland Coal Trade Conciliation Board. An increase is also shown in the number of men whose wages were changed under sliding scales. During 1900 changes took place under every known sliding scale, and in the course of the year a new one was adopted for the purpose of regulating blast furnacemen's wages in the West of Scotland.

During the year about 25,000 miners in Lanarkshire had their hours of labor reduced from ten to eight, while the number of days worked per fortnight were increased from ten to eleven.

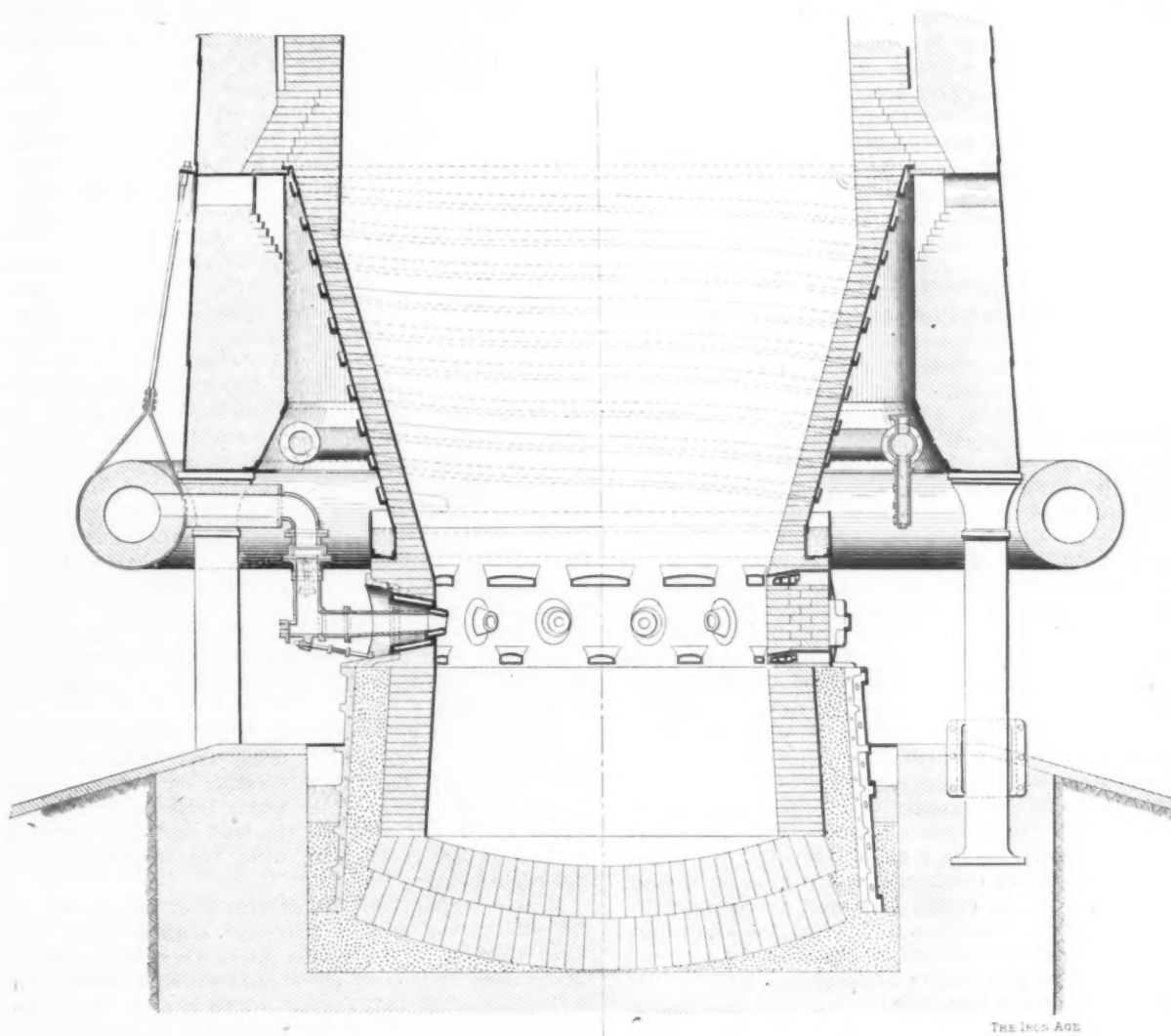
An Anti-Trust bill introduced into the Montana Legislature, which has been approved of in Committee of the Whole of the House and recommended for passage, provides that "no incorporation, stock company, persons or association of persons in the State of Montana shall, directly or indirectly, combine or form what is known as a trust, or make any contracts . . . for the purpose of fixing the price of a regular product, of any article of commerce, or of the product of the soil, for the consumption of the people." Penalties attached to infraction of the law embrace forfeiture of property and franchise of State corporations, and in case of foreign corporations, prohibition from carrying on business in the State.

### The Sahlin Blast Furnace Bosh.

To contrive simple and effective means to maintain the lines of the bosh and hearth walls of a blast furnace is a problem which has confronted all blast furnace managers, and to the solution of which most of them have given much study and experiment. The results of these experiments and of the experience gained are the various forms of water cooling devices which are now in use for protecting the walls of the lower part of the furnace. Among these there are the old and well tried devices, such as open cast iron or bronze boxes filled with water, closed bronze boxes under water pressure, copper or iron pipes built into the brick work, plate shells sprayed from the outside, similar shells surrounded by

To meet these conditions Axel Sahlin has designed and successfully employed at Millom Works, Cumberland, England, bosh casings which he has reasons to believe are original, inasmuch as broad and fundamental patents have been granted both in America and England.

The device, as shown in the vertical section, consists of a plate shell in the shape of an inverted frustum. To the outside are riveted troughs spirally wound around the plate from the top of the bosh to the circular discharge trough, which forms the base of the frustum. The bosh jacket is built of  $\frac{1}{2}$ -inch steel plates, with flush joints, butt strapped on the inside and double riveted. The jacket is supported on the furnace walls by aid of a circular rim of  $4 \times 4 \times \frac{5}{8}$  inch angle bar. At the bottom it is riveted to a circular steel water trough. The



THE SAHLIN BLAST FURNACE BOSH.

successive rows of circular horizontal water pockets, &c. Each one of these methods will answer and has its distinctive advantages and advocates, but also its drawbacks.

What is wanted is a device that will meet the following conditions. It must:

1. Maintain the furnace bosh at its proper diameter and slope during the entire campaign of the furnace.
2. Be reasonable as to cost.
3. Consume only a moderate quantity of not necessarily clean or fresh cooling water.
4. Be accessible for cleaning while the furnace is running.
5. Supply mechanical strength and stability to the structure of the bosh.
6. Permit of easy regulation of the amount of cooling water at different levels, as the zone of fusion is raised or lowered in the furnace.
7. Insure that no water can leak into the furnace.

spiral troughs are two in number; they are made up of  $1\frac{1}{2} \times 1\frac{1}{2}$  inch steel bar and an  $8 \times \frac{3}{4}$  inch steel plate, forming respectively the bottom and front of the troughs, which are pitched at an angle of about  $\frac{1}{2}$  inch to the foot. The vertical distance from bottom to bottom of the spirals is 14 inches.

If water is admitted to the top end of the spirals the bosh will, therefore, at once be surrounded by parallel bands of flowing water from 3 to 4 inches wide, spaced 10 to 11 inches apart. The inside of the steel jacket is lined with 9 inches of fire brick carefully fitted. Gradually this brick lining will disappear and be replaced by a layer of the characteristic silico-graphitic mass, which the furnace deposits wherever the fire of the interior is met by an energetic external cooling action.

From an economical point of view this bosh compares favorably with a bosh cooled by means of bronze plates, as the cost will not approach 50 per cent. of the latter. The Sahlin bosh is practically indestructible, its life being



as long as that of the  $\frac{1}{2}$ -inch steel plate. The thinness of the brick work or deposit prevents the disruption of the jacket so common in furnaces with thick brick walls. As the conductivity for heat of a plate is inversely proportional to its thickness, it is a question whether a  $\frac{3}{8}$ -inch, or even a 5-16-inch, shell would not give even better results than the  $\frac{1}{2}$ -inch plates, which have been used for the first two furnaces at Millom. The spiral troughs can be cleaned and scraped out at any time without shutting off the water. If required a fresh supply of cold water may be added at any point of the descent. Two streams of water admitted near the top end of the troughs will uniformly cool the entire surface of the bosh.

The bosh is applicable to modern furnaces placed on high columns as well as to those more old fashioned with lintel plates low down. As shown by the illustration, it can be placed inside of the old shell at any height above the lintel plates supported by the columns. The angular space between the out wall of the furnace and the bosh jacket would not give access to a number of rows of cooling plates, but however narrow the space the spiral troughs can be reached and kept clean; while for air circulation a few openings cut through the brick work and through the outside casing close under the upper edge of the bosh will be found sufficient.

### Engine and Generator Builders' Engine Type Units for Power Purposes.\*

BY H. C. EBERT, OF PITTSBURGH.

I have thought this occasion particularly favorable to discuss the relations between the engine and generator manufacturers for the purpose of promoting co-operation and harmony and to prevent causes for disagreement.

Purchasers continue to express a strong preference for direct connected apparatus, and there is now an extremely large demand for this. It is proposed, therefore, in this paper to deal specifically with the subject of so-called engine type electric generating sets. The manifold advantages of the engine type direct connected generator unit for power, traction and lighting purposes over the old style high speed belted type are so apparent to all of us that I think they need not receive consideration here. The management of the Westinghouse Electric & Mfg. Company are glad of the opportunity to place before your association some of the points which in their opinion might advantageously be considered jointly by the engine and the generator builders, with the object of establishing, if possible, a uniform practice in treating these same complex conditions, which arise in getting the two parts of an engine type unit successfully installed. We have observed that when the consulting mechanical or electrical engineer specifies the size and type of the generator unit to be furnished, he generally designates an engine that in capacity, speed and regulation will closely correspond with the same characteristics of the generator to be provided; but when the selection of an engine to drive a certain size generator is made by the purchaser, or he is coached in his selection by the ordinary engine salesman (and this is oftener the case than one would generally suppose), an engine is invariably secured which in these three most important features does not match the electrical part of the outfit. It is in these latter cases where eventually the engine builders have their difficulties and we also have ours, for the engine and generator are correctly considered by the purchaser as a single unit and the failure of one part to meet his requirements constitutes, from the purchaser's standpoint and that of his engineer, sufficient grounds to withhold his acceptance and purchase of any part of the unit. Manifestly, this is a hardship to the manufacturer whose apparatus is in all respects what it should be and as represented. Our object and yours should be to minimize the chances of an improper combination of engine and generator, and to this end we will invite correspondence from the engine builders and give close attention in the appropriate departments of our

works to any inquiries they may make respecting the electrical or mechanical details of the generator set to be provided, so that perfect calculations may be made for efficiently driving the generator from which ultimate power is to be derived.

The engine and generator specifications must be analogous in so far as capacity, speed and regulation are concerned. It is the general practice of the dynamo builders to give their machines a normal rating, allowing for 25, 50 or 75 per cent. overload for certain periods, ranging from ten minutes to two hours and sometimes longer. This overload capacity, upon which the electric companies' salesmen lay considerable stress, avails the purchaser nothing if the steam end of the unit is inadequate to care for it.

There should be uniformity in rating engines with regard to overload capacity of the generator to be driven. Of course, steam pressures, belting, &c., operate to change the engine capacity, but it would seem there could be greater uniformity than has yet been shown.

The engines for direct or continuous current power work should be designed to regulate quickly for sudden changes in the load, and the drop in speed from no load to a maximum load should be as nearly a straight line as possible. This is absolutely necessary to properly care for the overcompounding of the generator as the load increases. It should be noted that what would be considered an ideal regulation and operation in a direct current installation would not be satisfactory with alternating current power generators. There is no difficulty whatever in running two or more direct current generators together on the same circuit and dividing the loads equally and maintaining them practically constant on the different machines. However, in running alternators together, particularly at slow or medium speeds, the problem is different. In order that each alternating current machine shall deliver its proper share of current for the common circuit the machines must work harmoniously and simultaneously, the fundamental requisite being that the electro motive forces or voltages produced by the two or more machines operating in parallel must be equal at all times. If not, then at any instant when the voltage of one machine is lower than that of the others a current will be sent through it from the other machines, this, of course, not being desirable.

If the engine governors tend to give different speeds, say 500 and 525 revolutions, respectively, then it is evident that when the two alternating current machines are in parallel the machine which tends to run at the higher speed will carry all the load until the speed is reduced to 500 revolutions, when the second machine will begin to carry load.

It is essential that the governing of the speeds of the alternating current machines shall be such that when running at a common speed they shall receive their proper amount of power. As stated heretofore, it is to be observed that engines which govern closely between no load and full load may not be as well adapted for running alternating current generators in multiple as other engines in which the regulation is not so close. For example, if one engine runs at no load at 100 revolutions, and drops off 1 per cent. at full load, and a second engine also drops 1 per cent. between no load and full load, but happens to run at a slightly higher speed, say 101 revolutions at no load and 100 revolutions at full load, then it is evident that one engine would carry its full load before the other engine had begun to carry any load. If, on the other hand, the engine drops 5 per cent. in speed—that is, from 100 to 95 and from 101 to 96 revolutions, respectively—then a comparatively small load will reduce the speed of the latter to 100, so that the engines will begin work together almost instantly the generators are thrown in parallel, the engine which tends to run faster carrying only a slight excess load.

A member of your association suggested that this paper contain something to bring about a discussion of what the engine builders should do and what not, and the best way to avoid disputes and disagreements, presumably between the purchaser, the engine contractor and themselves. There would seem to be no good reason for dissension or disagreement if the engine company to

\* Abstract of paper read at the New York meeting of the Engine Builders' Association of the United States.



furnish the engine and the electric company to furnish the generator will acquaint each other with the general terms of their contract with the purchaser, in so far as those terms relate to the integral parts of the generator and engine combination to be supplied. In taking up correspondence with this object in view we will at once disclose any discrepancy in what we are to furnish conjointly to make a complete unit. Usually the parts which are not clearly covered in either the engine company's or the electric company's agreement are of a minor and inexpensive character; but still, if no attention or thought is given to them, we find ourselves on the ground with a shortage that will seriously retard the erection work and greatly increase its cost. Up to and including 125 kw. engine type generator, 200 revolutions per minute, we furnish simply the bare machine—that is, the fields and armature, without shaft, shaft key, outboard bearings, bed plate, steel guide strip and holding down bolts. When we contract for the entire unit our order to the engine company clearly stipulates the parts just enumerated as not being a portion of the generator, and are to be included with the engine. With machines of larger capacity than 125 kw. we supply bed plate, steel guide strip and holding down bolts, as usually the larger sizes cannot have a common sub-base with the engine. These remarks so far, excepting where they relate to parallel running of alternating current generators, treat specially with continuous current 125, 250 or 550 volt generators. Conditions surrounding the combined alternating current engine type unit for power purposes are somewhat different and will be referred to later on.

It is assumed that all the members of the Engine Builders' Association are familiar with the work that the committees on Standards for Direct Connected Generating Sets, appointed by the American Society of Mechanical Engineers and the American Institute of Electrical Engineers, have thus far accomplished in the direction of standardization, and it is confidently anticipated that their final reports will lead to some definite and unanimous action along that line. The time has certainly come when steps should be taken to prevent unreasonable requirements, and this standardizing of sizes, speeds, shaft diameters and general dimensions, if strictly adhered to, will undoubtedly be a strong preventive measure. The report of the committee already published, which was, I believe, but tentative, recommended capacities, speeds and probable shaft sizes for center and side crank types of engines from 25 to 250 kw. capacity generators, inclusive. It made no definite comments on the subject of armature spider bore, press fits and the method of keying to shafts.

#### Westinghouse Standard.

In connection with these questions, I would like to outline here briefly the Westinghouse Electric & Mfg. Company's standard practice, with which we have invariably had success. Armature spindles are arranged to receive a shaft amply large for extreme rigidity, so as to eliminate crank action as far as possible, it being absolutely necessary that the armature run perfectly central in the fields to prevent unbalanced magnetic pulls. Shafts are figured for both deflection and fiber stress, taking into account the possible unbalanced magnetic pull. In submitting generator drawings to engine builders we call attention to this magnetic action if the armature becomes decentralized, and state on the drawings the amount of magnetic pull which may be expected on the generator. As this unbalanced magnetic pull acts at right angles to the shaft and may be in any direction to the plane of revolution, it should be carefully considered, not only for the shaft diameter, but also for strength of foundation, sub-base and bearing housings. The connection between the outboard bearings and the sub-base should be particularly rigid. One or two instances wherein this magnetic action was not taken into consideration by the engine contractor finally resulted in almost total destruction of both engines and generators.

We make allowance for press fit in the armature, the amount depending largely on the material, or rather the quality of the material in the spider. This is such that the fiber stress per square inch produced by forcing the hub on the shaft is greater than the fiber stress pro-

duced by centrifugal force due to the rotation of the armature at maximum running speed. The engine shaft and gauges should be absolute, as a matter of record. It is a simple thing to use pin gauges, and they are better for giving close results. We therefore supply exact shaft gauges to the engine builder as soon as the shaft diameter is settled. Two short press fits are employed, one in each end of the spider hub. . . . It is our practice to use only a single feather or parallel key, half in the shaft and half in the hub. This key is furnished by the engine builder and fitted tightly to the shaft sidewise. Between the top of the key and the bottom of hub keyway there is a clearance of about 1-32 inch. The feather key admits of easily centering the armature, acts as a guide in pressing it to position and does not deform the hub as a driving or tapering key tends to do. We supply key gauges at the time shaft gauges are sent to the engine maker.

The foregoing remarks relative to standardizing apply simply to direct current generators. With respect to alternating current engine type machines the case is not so simple. There is not the same demand for uniform standard of alternating current dynamos, there being fewer builders of this type of apparatus. Usually, also, the generators are of such large size that it is not a requisite requirement to have everything in accordance with a predetermined standard. It would be difficult to even assign standard limiting dimensions, since there are usually two types of construction, one in which the field moves at right angles to the shaft, and the other in which it moves parallel to the shaft; this, of course, requiring different engine arrangements, especially in regard to shaft lengths. Consequently, to properly combine an engine type alternating current unit, even of the smaller capacities, the drawings should be taken up in each case and the necessary arrangements made for a successful combination.

In general, I would add that the Westinghouse engine type generators for both alternating and direct current power work can be designed with either of the following characteristics:

1. The generator revolving element may be pressed and keyed on an extension of the engine shaft, the engine builder furnishing the shaft, shaft keys and outboard bearing.
2. The generator may be self contained and include the shaft, shaft key, outboard bearing and a half coupling flanged for directly connecting to the engine shaft or fly wheel.
3. The generator revolving parts may be designed with a flanged extension for directly connecting to the fly wheel. The shaft on which this revolving element is pressed and keyed may or may not be a part of the engine shaft.
4. The large machines, 850 kw. and above, can be built with bosses on the spider arms for directly connecting to an extension on the engine fly wheel. In either of these cases the Westinghouse Company will provide the necessary gauges and templates to enable the engine manufacturer to arrange his parts for connecting to the generator. Mr. Ebert presented a number of drawings illustrating the different types of generator construction on both large and small machines, which were examined with interest by the engine builders present.

The Bullock Electric Mfg. Company, Cincinnati, Ohio, have recently opened an office at Buffalo, N. Y., 675 Elliott square. The office will be under the management of Francis B. Smith, an electrical engineer of wide practical experience.

At Pittsburgh a statement was filed last week in the case of Henry M. Atwood and others against the Tennessee Coal, Iron & Railroad Company. The suit is to recover \$14,610.87, an alleged balance due on a pipe contract.

William B. Wolcott has associated himself with Fitz, Dana & Co., Boston, Mass., the well-known dealers in metals, and will visit the Boston trade, among whom he has a large acquaintance.

### Coal, Iron and Shipbuilding Prospects in Scotland.

GLASGOW, January, 1901.—The absorbing theme in industrial circles here just now is the position of the coal trade and the probabilities of lower prices. At the time of writing negotiations are in progress between the coal masters and the coal miners which will have material effect on the situation. In July of last year the coal owners and colliers of Scotland came to an agreement to establish a joint board of conciliation, which should adjust wages and labor conditions for another year—in continuation of a board whose term of appointment was then expiring. It was further agreed that during the term of the new board wages should not, in any circumstances, be advanced above 8 shillings per day nor reduced below 5 shillings per day. These rates were arrived at by taking the average wage of 1888, usually regarded as bed rock year—viz., 4 shillings per day—and fixing the maximum at 100 per cent. and the minimum at 37½ per cent. on that rate. At the February meeting, when the collieries were very busy and high prices were being paid all round for coal, it was further agreed that the maximum rate of 8 shillings per day should begin on August 1 last and be continued for six months, at the expiration of which period the wages and trade position should be reconsidered by the conciliation board. These six months are now expiring. Almost immediately after this agreement was concluded—and to some extent in consequence of it—prices took an upward bound and received a further stimulus from the strike on the Taff Vale Railway in South Wales. The highest point reached by coal in Scotland last year was 18 shillings per ton, and when that figure was reached there was a good deal of discontent among the men at the fact that they were bound for six months to a considerably lower wage than they thought they would have been able to extract out of the masters in an inflated market. They adhered loyally to their agreement, however, though working only eight hours per day for 11 days in the fortnight. The institution of the eight hours' day did not reduce the total output, because a number of miners in the militia and reserves, who had been called out for service in connection with the South African war, returned to their occupations, and a number of men were diverted from other employments to the mines, tempted by the excellent wages there to be earned (although 8 shillings per day has been the regulation wage for an eight-hour day, many a miner has by extra industry been earning several shillings more per day from week to week). In October prices began to come down again, and, easing week by week, or at all events month by month, at the end of the year were about 4 shillings per ton lower than when the maximum wage came into operation. No change, of course, was made in the wage, as the agreement was good until January 31, but notice of a reduction required was lodged by the coalmasters with the Conciliation Board. That board met this week to consider the formal application of the masters for a reduction in the wages to the level of last July—that is to say, to 7 shillings per day, or 1 shilling per day less than the men have been receiving for the last six months. As the delegates of the men had been instructed to oppose any reduction at all, on the ground that current prices are still so profitable to coalmasters that they can well afford to continue to pay the maximum wage, it has been necessary to refer the matter to the vote of the men by districts. This vote will be taken next week, and it will doubtless be adverse to the masters' proposal. As, moreover, the relations between masters and men are friendly and the Conciliation Board intervenes to prevent collision, it is probable that further discussion will end in compromise.

Meanwhile coal prices keep sinking and at the time of writing are under the equivalents at the corresponding period of last year. The long stoppage of the iron and steel works has had a marked effect on the price of the small stuff, called "dross," which forms the principal consumption of the iron and steel furnaces—not to be compared with the splint coal used in blast furnaces. In respect of this, small coal is now several shillings per ton

cheaper than it was, iron and steel masters are in a much better position than they were before Christmas. But although resumption of work in these industries has been pretty general during the last ten days of the month, output is restrained by the slackness of the demand. It is undeniably the case that orders are very scarce, so scarce in the wrought iron trade that some masters have re-lighted only a portion of their fires. One does not hear much of foreign material undercutting at the moment, but of course there is a good deal of American material coming in or to come in, against sales made last year. Along with cheaper coal, ironmasters are going to have lower wages, for the Conciliation and Arbitration Board of the Scottish Manufacturers' Iron Trade Association has just ordered a reduction of 7½ per cent. in iron workers' wages, on the basis, according to the sliding scale, of the net average selling price of the last two months. But what is the use of getting costs down if buyers will not appear? It looks very much as if the reductions are coming too late to save the trade from a prolonged and severe period of depression.

### The Shipbuilding Industry.

No improvement has appeared in the shipbuilding industry since the year opened, although builders have (as a rule, though not without exception) orders enough on hand to keep them well employed during the year. The amount of new tonnage put into the water in January was small, as is usual, for January is a month much broken up by holidays and builders are accustomed to use pressure to get as much as possible on the stocks in December before the holidays begin. But even so, a total of 17,500 tons put into the water this January contrasts badly with 50,000 tons put into the water by Scotch shipbuilders in January, 1900. Even of those 17,500 tons some portion had been already included in the December output, although the vessels did not actually get into the water until January. The January output was really of vessels of 13,970 tons, of which seven vessels, of 13,020 tons, were launched on the Clyde, and vessels of 800 tons on the Tay and one vessel of 150 tons on the Forth—a sorry enough record. Not so small a January output has been made since 1897, or with that exception since 1894. But a good deal of work has been brought forward during the month, which will show in the launches of the next two or three months.

It is interesting to note that the January output included one sailing ship—a four-masted steel bark (the "Comet") of 3000 tons, built by William Hamilton & Co., Port Glasgow, for the Anglo-American Oil Company of New York and London. Another interesting item is the "Itria," a steamer of 5200 tons built by A. & J. Inglis for the multitudinous and ever growing fleet of the British India Steam Navigation Company. The only other big boat among the January launches is the "Ventnor," a spar deck screw boat of 4000 tons, built by Russell & Co., Port Glasgow, for Glasgow owners. For the Antipodes, moreover, was launched by the Caledon Shipbuilding & Engineering Company, Dundee, the "Titania," an 800-ton screw, for the service of the Australian United Steam Navigation Company. A small composite screw boat was launched by Hawthorne & Co. (Limited), Leith, for Port Elizabeth, South Africa. Of the total tonnage launched 9000 tons were for London owners, 4000 tons for Scotch owners, 660 tons for foreigners, and 300 tons for other British owners.

Curiously enough the new orders booked in January correspond in total tonnage with that of the vessels put into the water during the month—viz., 17,500 tons. The most important of these are in connection with the building programme announced by the Union-Castle Steamship Company, Limited, at the beginning of the year. That programme includes several large boats of great power for the services between Great Britain, Cape Town and Natal, and between the United States and South and East Africa. Four of these boats are to be built by Barclay, Coope & Co. and two by William Beardmore & Co., both near Glasgow; while the seventh, it is said, will be built in the North of England. The other January bookings were of small craft, but included a turbine passenger steamer on the Parsons patent, to be built by Wm. Denny & Bros., Dumbarton, for the summer traffic on the Firth of Clyde.



It will interest American readers to know that the Anchor line are completing building and about to build on the Clyde no fewer than eight steamers. Two of these, of 8300 tons and 5200 tons respectively, are for the Glasgow and New York service; two of 4500 tons each are for the Mediterranean and New York service, and four (two of 6250 tons each and two of 4700 tons each) are for the service between Great Britain and India and between India and New York. The great drop in freights seems to have checked the demand for the cargo tramps, the building of which it was expected would be encouraged by the drop in shipbuilding material. B. T.

### Some Notes on Central Station Heating.\*

Central station heating seems to be in the throes of the "system" to-day. John Doe addresses a learned body upon this particular way of doing it. So elaborate is his system, and so fully has every detail been covered, that it seems to leave nothing to be desired. He admits, however, that it has been done in other ways, but they are not to be compared with his. Forthwith Richard Roe, who also has a "system," corrals a page or so of the technical press, to tell a waiting world that his is the one and only system. He, too, admits that others have done it differently, but in so doing they have only exposed their ignorance. Others shy their castors into the ring and it is a merry squabble. John Smith has a way to do it, but he does not urge it upon the central electric station manager. He has reached the opinion that there is no help for the electric station man in exhaust heating, and he must work out his salvation in other ways. In his judgment the conditions under which the exhaust from central stations can be profitably used for heating are so rare that they may be dismissed from further consideration.

Now all this adds to the gayety of nations, but it does not help the investor or the engineer who are hunting for the best thing. Each system can point to successful plants, but in every case success has been reached by a long series of expensive experiments. It cannot be said in this field—any more than in any other—that no mistakes have been made.

Now it is not the purpose of this paper to decry or undervalue either the systems or their promoters. They have done a good work and are entitled to their reward. They were the pioneers and have borne the brunt of the battle. They have had a wide and varied experience and know what to do—as well as what not to do, a qualification of even greater value. Nor is the benefit of a single responsibility for equipment and results to be underestimated. But it would seem that the time is rapidly approaching when the installation of a complete "system" will be secondary to the intelligent design and selection of apparatus by unbiased experts of good technical training, supplemented by broad practical experience. They may be expected to attack this problem from the elevated standpoint of impartiality, selecting for their client whatever is good in any particular system, but leaving themselves free to purchase such portions—whether large or minor—from other builders where a particular detail is of higher merit.

The success of the installations thus far made has in most cases been due to fortunate surroundings. Indeed, it is not to be denied that in many cases a system of entirely different character would have succeeded equally well. It is nevertheless true that each way of doing it has its advantages, and also its disadvantages. Sometimes the conditions are so unfavorable for central station heating that no system could succeed. In other cases the conditions are peculiar, and can be met by one system better than another. A system which scores an unqualified success in one city may fail and another succeed in a neighboring city where the conditions are different.

It is not too much to say that continued success

hinges upon the proper selection of methods and means, and the detail design of the installation, coupled, of course, with intelligent and energetic business methods and technical judgment in the operation and management.

The above are the conclusions which resulted from a recent attempt to collect and digest the available literature and experience on the subject of central station heating. These investigations into the present state of the art had special reference to the use of exhaust steam from central electric plants. The lack of accurate and reliable data was surprising and disappointing. Much of the literature has been written from the standpoint of the promoter of a particular system, or by the user of a system who advocates it highly, but who, having had no experience with other systems, is not in a position to give an impartial verdict. There appear to be many faulty and misleading data at large. It seemed, therefore, that it might be of value to place on record some of the data collected—not with a view of presenting anything new or startling, but in the hope of bringing out additional facts, and of inviting discussion.

Heating from central plants is not new, although the subject has only recently begun to attract extended notice. Nevertheless, the outlook is one of great promise. It is, of course, only feasible in cities of some magnitude, where large commercial buildings or residences are concentrated, and so located as to be readily reached from a central station. This is usually on the outskirts of the business section, where fuel and water are readily secured, and where ample room for growth is available.

Many methods of central station heating have been employed, but they have now been reduced to practically two—steam and hot water. Experiments have been made with hot air, gas and electricity, but without marked success. Hot air has been carried to limited distances where groups of buildings are situated together, but the size of ducts necessary makes this system prohibitive over any extended area. It is feasible in isolated buildings in connection with coils served by either steam or hot water from a central station. Indirect heating of this character is common, but the successful distribution of hot air itself is necessarily confined to a single building or group. The manufacture and distribution and use of gas and electricity for heating are both attended with so much apparatus and with such large unavoidable first costs and losses in efficiency as to be out of consideration for any extended use. Both have—and will continue to have—some limited application for peculiar and special purposes, but neither is a factor of importance in the problem of central station heating. Even electric railways, which are perhaps the largest producers of electricity, and which produce it at the lowest cost, are in many instances abandoning electric heating in their cars, while many central stations already sell their exhaust steam for heating, but make no effort to sell the electric current for that purpose.

Central station heating follows the same general laws which govern isolated installations. When the sale of steam is the main business of the plant, and there are no engines on which low back pressure must be carried, the steam pressure is high enough to force circulation to extreme distances, and in some cases even to run engines. Pressure reducers are supplied at the point of use to give the customer whatever indoor or secondary pressure he needs. Where part of the steam supply is from the exhaust of engines driving dynamos—as is often the case in modern plants—the pressure must be so low as not to interfere with the proper working of the engines. This necessitates larger mains, and is sometimes accompanied by difficulty in securing prompt and effective circulation, particularly where the mains are long and not well designed or located. The branch pipe leads to the house mains identically as if supplied by a local boiler. The indoor distribution may be either one or two pipe, and needs no special design to fit it for central station work. It does not pay to bring back the returns to the station. The cost of the second pipe properly insulated, its rapid deterioration, and the frequent presence of oil or other foreign matter, has led to the abandonment of this practice. It is customary to install

\* Paper read at the seventh annual meeting of the American Society of Heating and Ventilating Engineers, New York City, January 22-24, 1901.



an economizing coil near the front of the house, over which external air is admitted, giving the necessary indirect heating and ventilation. The returns from the radiators pass through this coil, giving up practically what heat is left in them, and are then trapped to the sewer.

The main distribution system is, of course, always underground. The pipes must be large, and their temperature being high they must be thoroughly insulated with the best of material. It is also necessary to run a drain line of tile underneath each pipe line to prevent water from collecting and standing around the steam pipes. Suitable expansion joints, or "variators" are provided at frequent intervals; also man and hand holes for access to valves, joints, &c. Care must be taken in laying steam lines to prevent accumulations of water, all low points or pockets being drained and trapped to sewer. The steam system readily takes care of plants which have been installed to use hot water, as they have a surplus of radiating surface, and only a few very simple changes in the pipes are required.

#### Hot Water Systems.

Hot water systems are usually operated from central electric plants utilizing their exhaust. This has passed through closed exhaust heaters of large capacity, the outlet being to the atmosphere either direct or through a back pressure valve. If the heaters are of ample capacity and properly arranged, there need be no back pressure. The water may be given any desired temperature up to 212 degrees Fahrenheit, and is circulated by steam pumps. There is an outgoing and a return main, the distribution being what might be called multiple series. At each building served a connection is taken from the supply main and serves the radiators, which are themselves in series or multiple series. The returns are finally collected and go to the return main. There are a few instances of single pipe mains, the returns going back to the same main, being diverted to the house by a shunt.

There are two methods of regulation. In some cases the water is sent out at a constant temperature, and each individual user controls his radiators just as he would with his own plant, turning them on and off at will; or he may regulate them automatically by thermostats; or the entire plant may be handled by thermostats. In such an installation the speed of the pump varies, being controlled either automatically by a thermostat, or by an attendant who judges of the heat requirements by the temperature of the return water. In other installations the pump is operated at a fixed speed, the temperature of the water being changed with the weather. By adjusting the radiator valves of such installations the proper amount of water can be kept circulating through them, the customer thus being relieved of all care in the matter of regulation. The station attendant keeps close watch of an external thermometer, and raises or lowers the temperature of the outgoing water to correspond.

When the exhaust is insufficient, live steam may be admitted to the heaters, just as it would be turned into the mains with the steam system. In either case, separate boilers may be fired, discharging steam or hot water directly into the mains without the intervention of engines or heaters, a practice often followed.

In some few cases the attempt has been made to store surplus exhaust or its heat, at the time of maximum electric load, for use at times of maximum heat demand, but this involves considerable investment of capital and space, as well as a number of difficult mechanical problems. This is a feature of the work which will repay further study.

#### Exhaust Steam from Electric Plants.

For some time efforts have been made to interest owners of electric plants in heating, with a view to utilizing their exhaust steam. Nearly all small plants—and many of medium size, as well as a few large ones—are non-condensing. On its face the proposition is attractive. Here is a waste, or by-product, which can apparently be sold at practically the full value of the original steam. The demand for heat comes at the time of year when

there is a maximum demand for light, and when the greatest amount of coal is being burned any way. Another attractive argument is that the thermal efficiency of the ordinary engine is only about 10 per cent., rising in rare cases of exceptional importance to 15 per cent. The remaining 85 to 90 per cent. can be saved and made revenue earning by turning the exhaust into heating mains. The companies already sustain business relations with their prospective heat customers, and many would be glad to contract with them for heating. In many cases additional contracts for light and power can be secured which are not now available, as the owner must run his boiler for heating any way.

It would appear that the scheme ought to present no particular complications in view of the universal use of exhaust steam for heating in isolated commercial buildings. In studying the subject a little closer, however, some difficulties arise. In the first place, the use of exhaust steam has usually necessitated a considerable back pressure on the engines, thus straining them beyond what they were built for, and reducing both their capacity and efficiency. Surprising as it may seem, it has been seriously claimed that not only is back pressure not objectionable, but that it is, on the whole, rather a good thing for an engine, as forcing it to buckle down

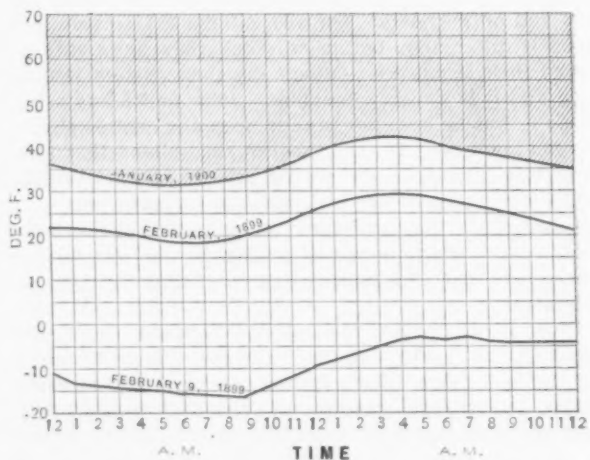


Fig. 1.—Showing Mean Hourly Temperature Readings for the Months of January, 1900, and February, 1899, also for the Coldest Day of the Year 1899.—From the Records of the U. S. Weather Bureau, St. Louis, Mo.—The Hatched Area Indicates the Heat which Must be Supplied to Maintain the Usual Indoor Temperature of 70° F.

to its work closely and restraining its desire to shirk. The testimony of builders and operators of engines is cited to show that no diminution either in capacity or efficiency is noticeable.

The fallacy of these statements has been amply demonstrated by Albert Spies and Professor Whitham, in communications to *Heating and Ventilation* for March and August, 1894, showing that the water rate per indicated horse-power hour increases fast with high back pressures. This would not be material if the demand for heat always equaled or exceeded that available from the exhaust. But this is frequently not the case, as is shown by Figs. 3 and 4. The situation is improved by separating the exhaust into two mains and allowing only a portion of the engines to exhaust into the heating mains when the demand for heat is small. The exhaust from the remaining engines then goes direct to the atmosphere, without back pressure, or to the condenser.

It has also been stated that the effects of back pressure may be overcome by simply carrying a little higher boiler pressure. As even in simple engines the initial pressure is four or five times the mean effective, the boiler pressure would have to be raised by more than the amount of the back pressure. As most plants are already working close to their safe limit of boiler pressure this is rarely feasible.

How much heating patronage may an electric station properly take on? Let us assume a station having 1000 horse-power of rated boiler capacity, divided into, say

5 200 horse-power units. One of these should be kept in reserve for cleaning and repairs. The remaining four boilers, rated at 800 horse-power, if of good modern design, will easily develop during the hours of maximum load one-third additional, a total of 1067 horse-power, equivalent, let us say, to the evaporation of 32,000 pounds of water per hour. Allowing 5 per cent. for leakage and condensation losses through pipe system, engines, &c., and 15 per cent. for heating feed water, a maximum of 25,600 pounds per hour of exhaust steam is available to be sent out into the heating mains. The loss due to condensation and leakage in the mains cannot be definitely determined, and is, in fact, variable, not only in different plants but in the same plant. It probably varies from 5 per cent. upward, but under no conditions should it exceed 25 per cent. On the latter basis 19,200 pounds of steam is available per hour for use in buildings. The condensation per square foot of average ordinary direct radiating surface, under the most severe conditions, runs from 0.25 to 0.3 pounds per hour. On the basis of the latter figure, the steam available will supply continuously 64,000 square feet of radiating surface.

In heating, however, there is a load factor, just as there is in light and power. Experience has shown that no matter how many lights, motors, or radiators may be connected to the station, they are never all on at once. Many stores, theaters, offices, rooms, and sometimes entire residences, are only in partial use, and are, perhaps, entirely out of use at certain times. I have been unable to secure any exact data as to what this load factor actually is for heating. It depends, of course, upon the system of service, and also on the rates, and whether

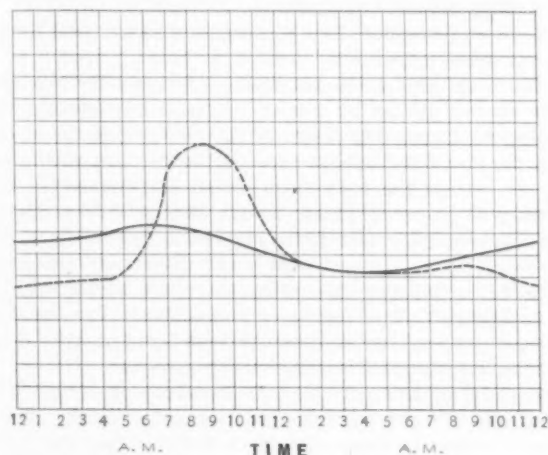


Fig. 2.—Curve of Hourly Heat Demand, with Corrections Indicating Probable Demand on Station.

flat or by meter. It would appear conservative, however, to put the average figure at 80 per cent., on which basis it would be safe for the station under discussion to contract to serve 80,000 square feet of ordinary direct radiating surface, or its equivalent. All of this is based on the assumption that the plant is primarily an electric station, and that it has not as yet been thought wise to install additional boilers or apparatus for the sole purpose of supplying heat. This may come later, but the attitude of the average plant to-day is that exhaust steam, and not electricity, shall be the by-product, the object being to increase the efficiency of the existing plant and force of operatives.

The above computations indicate that 80 square feet of radiating surface may be connected for each rated boiler power of plant, assuming the usual boiler reserve of 20 per cent., and ability to overwork of 33 per cent. If we assume that the radiating surface throughout the city averages 1 square foot to 75 cubic feet of space heated, each boiler horse-power will take care of 6000 cubic feet.

The above figures are conservative. Under favorable conditions it would often be safe to take on 100 square feet radiation for each boiler horse-power, or 7500 cubic

feet of space. For severe conditions, however, the last named figures are too high.

Most electric stations keep records from which curves or charts are plotted, showing the output throughout the 24 hours. No such charts seem to have been kept by heating stations. The data ought to be easily secured by

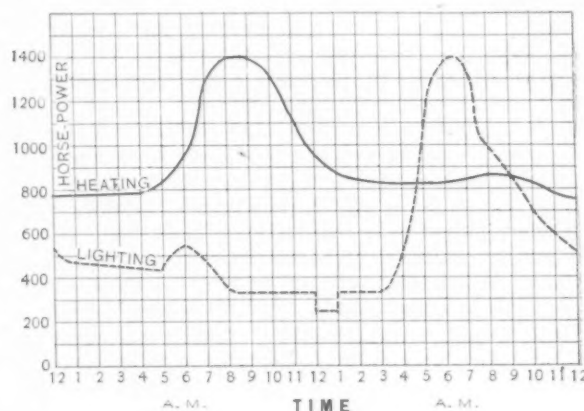


Fig. 3.—Curve of Hourly Heat Demand, Compared with the Output of an Average Electric Lighting Station, Both Reduced to Boiler Horse-Power.

simply noting the temperature or speed of pump in the water system, and by hourly, or half hourly, readings of counters on boiler feed pumps in live steam stations. The demand for heat must, of course, closely follow the fluctuations of external temperature. I have secured from the St. Louis office of the United States Weather Bureau some interesting hourly temperature readings. Fig. 1 gives the average hourly temperatures in St. Louis, Mo., for January, 1900, which is, perhaps, a fair average winter month. Fig. 1 also shows the curve for February, 1899, one of the coldest months. Also the readings for the coldest day of that month, which was, in fact, the coldest day of the year. The cross sectioned area between the average line and 70 degrees represents the heat which must be supplied to maintain the usual indoor temperature. This is a maximum between 6 a.m. and 8 a.m. and a minimum about 4 p.m. The range, however, is smaller than would ordinarily be assumed. In most heating systems, however, particularly those not regulated automatically or from the station, the demand for heat would not follow the curve exactly, but would lag behind it, an appreciable interval of time being necessary to make the external changes of temperature felt indoors. Furthermore, some normal deviations are to be expected. The most important of these is probably the turning off of heat in unoccupied buildings at night, and the shutting down of heat in residences at bed time. These would all be cut in again early next morning. This effect undoubtedly exists, but to what extent is difficult to determine.

In Fig. 2 the curve showing the heat required to maintain 70 degrees has been inverted, and a correction intended to indicate what the actual demand for heat will probably be, has been made. In Fig. 3 the revised curve has been plotted upon an average load chart of an electric light station, and in Fig. 4, upon an average load chart of an electric railway station. In both cases the maximum output of steam for heating is made the same as the existing maximum for electric service. It is assumed that enough steam heating has been taken on to load the plant to this point, and that the boilers reach their maximum output twice daily, once for heating and once for light or power.

Fig. 3 shows that for five-sixths of the time the demand for heat exceeds the exhaust available, and that live steam must be used and additional coal burned for heating. From one-third to one-half the steam required during this period can be supplied by the exhaust, and the economy of the engine is of minor importance. Back pressure during this period is not objectionable, as the reduction of capacity, if noticeable, can be met by putting in more engines. For the remaining 15 to 20 per cent. of the time the exhaust exceeds the demand, and



one-third to half of it goes to waste. The losses in engine capacity and efficiency from back pressure during this period are serious. It is clear that the crying need of this service now is a satisfactory apparatus by which the exhaust now wasted during the peak of the electric load can be made available during the hours when there is a deficiency of exhaust.

Fig. 4 shows that the heat demand corresponds far better with the load of an electric railway, which indicates that exhaust heating is a better proposition for railways than for lighting plants.

Fig. 3 indicates the difficulty under which the average electric light station labors. No scheme of electrical storage having yet been found sufficiently cheap and efficient to come into general use, electric stations must generate current exactly as their customers use it. For a few hours each day, therefore, the plant works at its maximum, but for over 80 per cent. of the time a large portion of the equipment is idle. This adds greatly to the cost of generating electricity. Station managers are always on the look out for means of making the work of the station more uniform, and of utilizing their station, equipment and force more hours each day. Central station heating offers advantages in this direction, as the entire boiler equipment and force can be utilized to advantage when the electric load is small by supplying

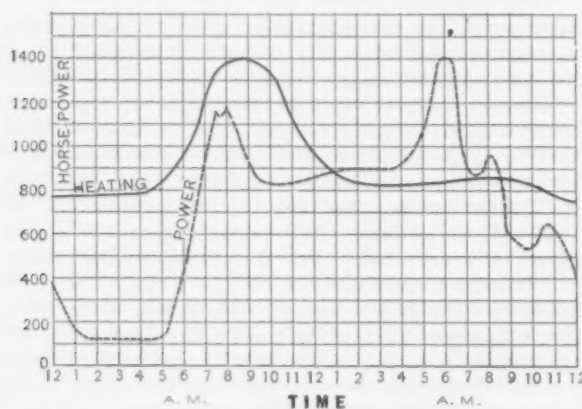


Fig 4.—Curve of Hourly Heat Demand, Compared with the Output of an Average Electric Railway Station, Both Reduced to Boiler Horse-Power.

directly from the boilers whatever deficiency there is in the exhaust for heating.

Is it possible to weigh the exaggerated and conflicting claims of the advocates of the steam and hot water systems with a view of reaching an unbiased conclusion as to the particular features in which one or the other appears preferable? While it cannot be hoped that such a conclusion will meet the approval of either party, the interests of sound engineering would appear to make the attempt worth while. It is assumed, to begin with, that each installation is to be put in in good faith, and that the material and workmanship is to be first-class in both cases.

#### Advantages of Steam System.

The following points of advantage appear to be with the steam system:

1. Simplicity. There being a single pipe line and no pumps being necessary.
2. The equipment or plant appears to be more durable. The life of underground pipe lines carrying steam has been shown to be much greater than those carrying hot water.
3. The investment in radiators for utilizing the heating service is less by the usual ratio between steam and hot water radiators.
4. The system will satisfactorily serve buildings which have been equipped for either steam or hot water heating. A hot water plant cannot handle a building equipped for steam heat, except at considerable expense for reconstruction.
5. Less pressure being carried there will be fewer leaks, and less liability to damage in case of accident.

6. Leaks may be repaired, valves packed, &c., without the necessity of shutting off the entire house.

7. The steam people have whatever advantage results from long experience in the heating business, and the construction and operation of many plants under wide ranges of conditions.

#### Advantages of Hot Water.

The following advantages appear to be with the hot water method:

1. Cheapness of installation, although this is to some extent offset by the necessity for a return line. The low temperature makes it unnecessary to provide as many expansion joints, or to use as high a grade of insulating material, while the fact that the medium is water renders subdrainage unnecessary.
2. Milder temperature, which is preferable in radiators, hot water now being used almost exclusively for residences. The low temperature also reduces the radiation losses, which are proportional to the differences of temperature.
3. There being no waste to sewer, either at low points or at discharge from residences, there is no loss of water or heat at these points.
4. Water appears to adapt itself readily to regulation, either automatically or by an attendant at the station.
5. Water appears to lend itself better to heat storage, which, as is shown in Fig. 3, would improve the economy of the station.
6. Operation without back pressure. While this is of less importance than would appear at first glance, it nevertheless should have the earnest attention of the steam advocates.
7. There are no offensive odors from the air valves or stuffing boxes of radiators.
8. It would appear to be easier to discover and locate serious losses of water or heat.

There appears to be no choice between the two systems in the matter of power required to circulate the heating medium. Fig. 3 shows that for five-sixths of the time the demand for heat exceeds the exhaust available, so that neither the back pressure on the engine nor the running of a special pump would affect the total steam to be generated, as there is always a deficiency to be made up direct from the boilers. Both systems are wasteful in this respect during the peak hours. If, by the adoption of modern methods, steam can be distributed without back pressure, the system will then have an important advantage over water.

It would appear possible to meter both systems. The use of steam could be measured either directly by steam meters or by hot water meters on the returns. In those water systems carrying constant temperature and changing the speed of pump to suit the demand, the water could also be metered. This could not be done, however, where the speed of pumping is constant and the temperature is varied.

It would be risky to hazard a recommendation as to choice of system, as every proposed location would vary in its conditions and requirements. Some general observations may be in order, however.

If the capital available is limited, and the most ground must be covered for the money, the water system would probably be selected. If the city to be served is hilly, or has many tall buildings to be served, the water system would appear to be undesirable on account of the high pressures which would have to be carried in order to reach the high buildings or districts, this pressure being likely to cause trouble in the low districts. If a preliminary canvass of the city shows that a majority of the buildings to be connected are already equipped for steam heat the steam system should be adopted, while a majority of hot water plants would indicate that system.

As more steam is required to heat a building than to light it, a central plant can secure a sufficiently large heating patronage much closer the station than it can its light patronage. If the buildings to be heated are close at hand, so that the investment in expensive mains can be kept down, the advantages would be with the steam proposition. On the other hand, if considerable area is



to be covered, considerations of first cost might limit the system to water. A point which appears to hamper the water system now is the uncertainty as to the life of underground pipe lines and their insulating conduits. Until the system has been in service for long periods of years, under all sorts of conditions of soil and climate, there will continue to be some hesitancy on the part of capital.

Not all electric stations can enter the heating field with profit. Many are located too far from the district to be heated. Cheap fuel and water, and ample room for present arrangement and for growth usually determine the location of plant. In other cases the topography is such as to make it an attractive proposition for neither steam nor hot water. In some places the price of fuel is low, and in others the people have not been educated up to the point of appreciating artificial heat under modern methods, and could not be induced to pay a profitable price for it.

The rates charged for heating in different cities and under different conditions vary considerably. The conditions controlling the price are the cost of fuel, the distance the service is carried, range of external temperature, and number of months of service. In most cases the charge is for a season's service, and is based either upon the square foot of radiation, or 1000 feet of space heated. The rates for hot water vary between 12½ cents and 20 cents per square foot of radiation. For steam the range is from 15 cents to 30 cents, although a rate of 50 cents is reported from Seattle. The charges run from \$2.50 to \$5 per 1000 cubic feet of space heated, which, of course, is independent of whether steam or water is used. A slightly higher charge is made for indirect radiation. When steam is sold by meter, the unit is the kal, which is the amount of heat required to evaporate 1 pound of water. This charge varies from 45 cents to 80 cents per 1000 kals, depending upon the customer's requirements.

Experience in hot water plants indicates an average consumption of coarse slack of about 55 pounds per square foot radiating surface per season. If we assume that 1 square foot of surface heats 50 cubic feet, then 1100 pounds of coal will heat 1000 cubic feet of space; or with slightly better coal it may be said that one pound per season will heat one cubic foot of space.

For some years it has been the almost invariable practice in isolated steam heating plants to use one of the vacuum systems of handling air and returns. Heating in modern buildings is now done without back pressure on the engines. The use of such systems is entirely practicable in connection with central heating plants, and there have been some successful installations of this character. Their use, of course, adds somewhat to the complications, and materially to the first cost. The recently developed vacuum air valves—which prevent the return of air into radiators—seem well adapted to this purpose at small cost, in connection with steam systems. There seems to have been no such application of them, however, and some doubt exists as to whether they can be kept tight. Their use would necessitate carrying a pressure of several pounds on the system for a few minutes every day to blow the air out of the radiators, but this could be done at a time when live steam was being used any way. Traps of special construction would also be necessary to discharge the return into the sewer when there is no pressure in the system, and without admitting air.

Some revenue may be secured from the heating of hot water tanks, for baths, laundries, kitchens, &c. This service, however, is usually desired for the entire year, and it is only in rare instances that sufficient revenue can be secured to justify carrying heat on the mains during the summer months.

In Fig. 3 the curve represents the maximum output of both light and heat. In mild weather the heat curve would have the same general characteristics, but the output would be much less, and for considerable periods in the fall and spring it might even drop to a point where the demand was equal to or less than the exhaust during periods outside of the peak. At such times

no steam would be used direct from the boilers, and absence of back pressure on the engines would be of importance. This would also hold true for a considerable period after a new company enters the heating business, as it would require some time to secure enough contracts to utilize the full capacity of the boiler plant. During all these periods of service the exhaust might be ample.

The steam people claim that the demand for heat will soon reach a point where in cold weather it will utilize all the exhaust available, even at the peak of the electric load. If this is a fact, then Fig. 3 shows that the demand will be some 50 per cent. greater between 5 a.m. and 7 a.m. If the electric plant is worked to the limit of its capacity at the peak, as has been assumed, it would then be necessary to install additional boilers to take care of the early morning heating load. This changes the entire aspect of the problem and makes the station one which produces heat and sells its electricity as a by-product, instead of an electric station selling heat as a by-product. Such an installation may often be justified by circumstances, but it is foreign to the present discussion, which presupposes no additional investment at the station on account of entering the heating field.

It is true that steam at atmospheric pressure is not quite as effective as steam at 5 to 10 pounds pressure. A good vacuum system of air removal would in most cases make the radiating service sufficiently more effective to overcome this difficulty. But as the maximum demand for heat comes at an hour when live steam must be employed any way, there is no objection to carrying a somewhat higher pressure for short periods to overcome any deficiencies which might be found.

What is the best thing for a central station to do with its exhaust—put in condensing apparatus, and increase the capacity and efficiency of its engines 20 to 25 per cent.; or to run non-condensing, and sell the exhaust for heating?

Many points must be considered in answering this question, such as cost of fuel, cost of plant and water for condensing, capacity of engines, and work required of them, hours of loading, amount of the heating that can be secured, &c. Condensing increases the value of the steam only 20 to 25 per cent. as a maximum, while the sale of the exhaust for heating should bring 75 to 80 per cent. of its original value. It is evident, therefore, that when the exhaust can be sold for heating at fair rates and without too large an investment in plant, it is more profitable to do this than to condense. If the amount and duration of the load and the price of fuel are such as to justify condensing apparatus it could be kept in operation throughout the non-heating season, and also during the heating season on those units from which the exhaust was not needed for heating, particularly during the peak of the load.

A concise statement of the advantages to the customer, the electric plant, and the general public resulting from the installation of a central heating plant, may be worth making. The customer saves the expense of coal and ash handling, with their unavoidable accompaniments of dirt, dust, smoke and soot. The saving of labor is a considerable item, particularly in large plants. The heat supply is regular, continuous and unlimited, and is available throughout the entire night and on Sundays and holidays. The building need never become cool. The heat is capable of regulation and adjustment with fluctuations in the external temperature. Valuable space in basements and cellars is saved, there being no longer any necessity for boilers or coal storage. It is possible to have a cool cellar, which is often an advantage where it is desired to keep vegetables or provisions. Insurance rates, too, are less where there is no fire in the building.

The service demanded of the ordinary heating boiler is so variable, and it has so little skilled attention, that its thermal efficiency is very low, rarely exceeding 50 per cent., and averaging probably not over 35 per cent. Furthermore, in order to keep fire over night, and to avoid making a smoke nuisance, it is almost imperative in many ordinary heating plants to burn the most ex-

pensive grade of the very best coal. In large St. Louis residences, for instance, anthracite lump of 13,000 British thermal units per pound, costing \$7 to \$8 per ton, is burned, with an average efficiency of 35 per cent. Under the boilers of a central heating plant slack coal or screenings, costing \$1 per ton and having a calorific value of 10,000 British thermal units, would be burned, with an average efficiency of 60 per cent. The fuel cost of the isolated plant under such conditions is 10 or 12 times as great as that of the central station.

The heating business has attractions to central electric stations aside from the mere profit which the books may show. It adds to the permanency and security of the company's business, and, therefore, places the capital invested upon a more attractive footing. It often enables the company to secure contracts for electrical service which it would not otherwise get. The most difficult condition which the salesman of electric light and power meets is where the owner must retain and operate a boiler plant to heat his building. He argues that the additional expense and inconvenience of operating engines and dynamos for light, elevator and power service are not great. When a central station can supply heat as well as light and power, it is in a position to meet this argument and permit the customer to remove his boilers and utilize the space for other purposes, besides doing away with the many nuisances connected with the operation of his own plant, particularly through the summer.

There are advantages to the general public in central station heating in the concentration of the plant in an out of the way location, in the reduction of the number of coal and ash teams on the streets, and the removal of the smoke nuisance, aside from the direct benefits obtained by those who make connection with the plant.

There are many incidental advantages connected with the use of central station heating beyond the mere saving of fuel. This service—while in many cases a necessity—is in some instances a luxury, and it should command a price accordingly. It is worth much more to a customer than the mere amount he saves, and he should be willing, therefore, to pay the central station a rate which will enable it to earn a fair return on the necessary investment.

While these notes indicate that there are many cases where central station heating would not be profitable to electric plants, it is nevertheless a fact that many cases exist where a small investment in this direction can be made to yield handsome returns. Just what can be done in any particular case, and whether steam or hot water is preferable, and what the details shall be, can only be determined by an intelligent and exhaustive study covering all local conditions. It goes without saying that such a study should be made by disinterested and competent persons who have no interest in the matter further than to discover and reveal to their employers all the facts bearing on the case.

#### The Cramp-Vickers' Sons & Maxim Negotiations.—

A Philadelphia dispatch reports that the hitch in the Cramp-Vickers' Sons & Maxim trade is stated to be the price asked for the Midvale Company. Investigation by the English interests is understood to have brought about the conclusion on their part that the basis of valuation named by that company, \$7,500,000, was not warranted by the earning ability. There was never any idea of asking the Midvale people to take anything except cash, and it may be that satisfactory terms will be reached later. The combination as a whole, it is stated, has not been entirely abandoned. A steel plant may be built if an existing one cannot be purchased at a satisfactory figure, but the objection to putting up a new one is that it takes time. Bethlehem is said by parties interested in the trade to be too large and expensive a plant for the purposes. There is not and has not been at any time during the negotiations any objection to the terms for the Cramp Company. There was no trouble in floating the new company abroad, for the new securities were underwritten in 24 hours.

#### Specifications and English Engineers.

To American manufacturers and engineers the following editorial article from the *London Engineer* will be of much interest:

We continue to receive from various quarters complaints concerning the drafting of specifications by consulting engineers and engineers in the service of corporations and companies. Additional force is lent to these complaints by statements which have been made as to undue advantages enjoyed by foreign manufacturers. We have referred to these matters before on more than one occasion. The questions raised are, however, so important that we shall not apologize for discussing them again. The complainants assert that the specifications to which they have to work contain stipulations which are more or less unreasonable. They manifest a lack of common sense; they are archaic, out of congruity with the advanced practice of the present day; and are either drawn by old men, behind their time and out of touch with modern practice, or by young men full of theory and of no sound or well developed practical experience. It is not necessary that we should indorse these accusations; it is desirable that they should be examined.

A specification is supposed to be a statement of the nature of something which the engineer wants made, prepared for the guidance of the firm or individual who proposes to make it. The specification may be a detailed description of the thing, accompanied by working drawings; or, alternatively, it may be merely a general indication of what the wishes of the engineer are. A very wide opening is given for abuse. On the one hand, the engineer may oppress the contractor; or, on the other hand, the contractor may defraud the engineer—or, more strictly, the engineer's clients. With these facts, however, we have nothing to do just now. We are about to suppose that the specification is honestly drawn, according to his lights, by the engineer, and that the contractors are willing to work to it in the spirit as well as the letter. Under just these conditions the specification may be most harmful. Roughly speaking, those concerned in specifications may be divided into two classes. The one consists of a limited number of professional men who are constantly drawing up specifications and placing orders; the other consists of a number of firms who carry out contracts under specifications. These are not manufacturing engineers in the ordinary sense of the term, at least in this country. The distinction is important. The nature of that importance will be manifest presently.

It is generally enough admitted that in the present day it is extremely desirable, not only that the cost of work of all kinds should be kept down, but that every facility should be given for its rapid execution. The head and front of the offending of the modern specification is that it augments cost and hampers production. There can be only one way of accounting for this if it be true—namely, the incompetence of the man who draws the specification. We speak of incompetence advisedly. A man may be a very able engineer, and yet woefully incompetent in his dealings with his fellow men. Let us take a case in point; very similar things occur every day. A certain railway is being made, say, in one of the colonies. Broadly speaking, the bridge work is of a very ordinary kind. It can be divided up in terms of spans. There are four or five spans of 100 feet wanted; 50 spans of about 40 feet, and a number of girders to cross very small gullies, little more than culverts. There is no sufficient reason why all the bridges of the same span should not be identical throughout. There are, say, five bridges of 100 feet each, then all that are needed are ten lattice girders, with the cross girders, &c., for a span of 100 feet, 100 plate girders for 40-foot spans, and a number of rolled girders of sufficient strength for the gullies or culverts make up the total. A man manufacturing girders or bridges on his own account would keep all the necessary material, and, indeed, many of the parts, in stock, and the purchasers could buy out of stock, and, therefore, in the cheapest and quickest market. But nothing so simple will satisfy the English civil engineer. Instead of a single type of 100-foot girder, there may be



five types. As for the 40-foot girders, they may be of a dozen different patterns. We are not exaggerating; there is not a bridge maker in this kingdom who will not bear witness to our accuracy. Why is it that the engineer who draws the specifications does not see that he is handicapping the contractor, delaying the completion of the railway, and greatly increasing the expense? He seems never to have learned that it costs much less per bridge to make half a dozen bridges all alike than it does to make a single bridge. Nor is this all; even when the order is but for a single bridge, the engineer will apparently go out of his way to take care that the repetition work shall be as little as possible. It is, perhaps, highly scientific to state that there shall not be more than two bars of the same dimensions in a lattice girder bridge, but it is none the less the worst possible engineering. It is engineering of a kind at which the bridge builders of the United States are quite justified in laughing loud and long. We have not the smallest hesitation in stating as a general truth that no one is fit to prepare a specification for bridge work who is not completely informed as to the best modern methods of building up bridges, the capacities of the tools employed, and the sizes of steel bars and plates that can be regarded as always in the market. That engineer will do best who knows how to avail himself of the materials and appliances most readily obtained; and that engineer will do worst who at every step demands special sizes, special materials and special tools. In the present day these things are wholly unnecessary.

The absence of common sense in the drawing of specifications is by no means confined to such examples as we have just cited. In not a few specifications will be found stipulations which are very injurious to the best interests of the country. The civil engineer very rightly demands that the materials which he uses should comply with certain tests. A steel bar, for example, shall not break with less than 28 tons, or more than 30 tons. It must stretch 20 per cent., and stand a severe cold bending test. Such stipulations are quite legitimate, and no exception is ever taken to them. But not content with this, the engineer goes on to stipulate that the chemical composition of the steel shall comply with a certain formula. Thus not only is a certain result to be got, but it must be got in a particular way. Now, as a rule, the engineer does not really know anything about steel or its manufacture in a way that would justify him in stipulating for a given chemical composition. It so happens that he once had some steel which complied with the conditions, and he insists that all other steel shall be the same. As a matter of fact, so long as he gets a material which satisfies his tests, it is of no earthly consequence how the steel was made. It would occupy more space than we can spare to explain how this kind of specification throws work into the hands of our foreign competitors—who flatly refuse to comply with the condition, but nevertheless get the orders—and limits the numbers of those in this country who will tender. Specifications of this kind are simply stupid. There is absolutely not one sensible argument to be adduced in their favor. If the engineer pleases, let him specify a definite chemical composition, and abjure mechanical tests. But he is at all events wise enough to avoid this. His confidence in the perfection of his chemical formula will not bear the strain of an implicit faith in its complete utility.

We have spoken of civil engineers. But it is not for a moment to be supposed that they are the only offenders. Specifications for machinery, and particularly pumping machinery, not infrequently contain ridiculously onerous stipulations. They not only insist that certain results shall be obtained, but they dictate the means by which they shall be got. Not long since we saw a specification in which the indicated power of an engine was stated. The dimensions of the cylinders, the pressure, the kind of valve gear, the ratio of expansion, and finally, the contractor was to guarantee the consumption of steam per horse per hour. We need scarcely say that the order was never placed under that specification. An engineer is justified in stipulating for power and consumption, but he must leave the details of the way in which the steam is to be used to those who are asked to guarantee a given economy of fuel under heavy penalties. Colonel Denny, M.P., a member of the well-known Dumbarton firm, in

his presidential address to the Institute of Marine Engineers, delivered on January 21, referred at considerable length to the question of specifications prepared by superintendent engineers. He criticised very sharply a phase of the specification which we have not touched on, and we cannot better conclude this article than with a quotation from Colonel Denny's address. The first thing the superintendent engineer ought to think of is how little complication he can possibly do with; how he can devise an engine that will run with the least coal, the least oil, and, above all, the least amount of the human problem in the way of supervision. "But," said Colonel Denny, "we have had specifications put into our hands which appear to be designed for precisely the opposite intention. I have an instance in my mind at the present moment, in which we got a specification for an engine which was so overloaded with what I think may be called fads—at any rate, what we think might quite well have been done without—and consequently had so many names of persons who were to supply particular pieces that the price was enormously increased. I can even give you the extent of the increase. The engine was one which would have cost, if we had been allowed to design it, and supply it with an absolute guarantee that the work would be just as well done as by the other, £70,000. The addition of what I have called fads, and the naming of people to supply various material, brought the price up to no less than £90,000. And for what end? It threw the whole of the responsibility not upon the engine builder, but upon the engineer, who had no right to have such a responsibility upon him. He, to protect himself, specifies certain people to supply almost every article in the engine. And what was the result? As I have said, £20,000 added to the price of the engine. For what is the immediate procedure of an engine builder when he gets such a specification? He at once issues inquiries to every one of those named people, stating that their names are in this specification to supply certain articles, and what is their price. Probably 19 or 20 other people offering for the job do the same thing if they are not fools. The result is that it is rubbed into those people that their names are in. And what do they do? Very properly, make their price a first-rate paying price. When I tell you that in the case of several of the articles costing most, there was no less of a difference than 100 per cent. between what we could have supplied an equally good article for and the price quoted to us by the specified contractor, you will see what bearing this has upon the subject."

Finally, we may say that the specification is an edged tool, and that it may, when improperly handled, be as dangerous as it is useful when rightly employed.

Five hundred persons are reported to have perished last week in a disastrous oil conflagration at Baku, Russia. A fire, which broke out in the petroleum warehouses of the Caspian & Black Sea Company, spread to other depots containing naphtha, which overflowed and set fire to the dwellings of the workmen.

The proprietors of the Dowlais and Cyfarthfa steel works in South Wales have appealed for a reduction of their tax assessments on the ground that American competition is causing an extraordinary depression in the South Wales steel trade.

The December record of incorporations of companies with a capitalization of \$1,000,000 or more shows a material falling off as compared with the preceding months of the year, except August and September, which made a slightly lower record. The total for the month was \$106,900,000, of which \$64,600,000 was contributed by New Jersey incorporations. The only company of unusual size or interest chartered last month was the International Crude Rubber Company, with authorized capital of \$30,000,000.

The official returns of French foreign commerce during 1900 show total imports of the value of \$881,706,000, compared with \$903,661,000 in 1899. The French exports last year amounted to \$815,606,000, as against \$830,527,000 in 1899. The excess of imports over exports was \$66,100,000.



# The Iron Age

[ New York, Thursday, February 14, 1901.

DAVID WILLIAMS COMPANY,	- - - - -	PUBLISHERS.
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RICHARD R. WILLIAMS,	- - - - -	HARDWARE EDITOR.
JOHN S. KING,	- - - - -	BUSINESS MANAGER.

## A Case in Point.

We have before called attention in these columns to the dangerous encroachments of organized labor upon the rights of employers, especially corporations, through the medium of bills which often escape recognition as to their true character when introduced under the guise of general laws designed to protect or promote the public welfare. The carelessness with which such bills are often considered in committee, and the easy good nature with which they are enacted on the "log-rolling" principle, throws upon the governors of States a grave responsibility, which is too often perfunctorily discharged because it is less trouble to sign doubtful bills than to analyze the intent or antagonize the interests behind them. The great danger in such legislation does not reside in bills which are openly and ostensibly in the interests of organized labor, or frankly and admittedly hostile to those of capital. On such bills the lines are drawn clearly and unmistakably. If organized labor is strong enough to carry its point against the influences which rally to the defense of property and franchises, the resulting injury to the business interests of a State is likely to be only temporary. Such laws are danger signals. They give fair warning to capital that it must take the risk of being sacrificed if it seeks investment in a State where such legislation is possible. As the result, capital takes alarm and is withheld from investments. Bonds of corporations doing business in States which have gained a reputation for faith in the economic heresies of populism are discriminated against in the financial markets, and development is checked. This sets in motion reactionary influences, which repeal the objectionable laws, and, as far as possible, restore conditions favorable to confidence. As the rule, a State which has other than agricultural resources and is ambitious to further their development does not need more than one such lesson in a generation; but, as has often been remarked, confidence is a plant of slow growth, and, once destroyed, it does not readily take root again in the same soil.

In the case of laws skillfully framed to conceal their true purpose, the mischief is more subtle and far reaching. They do not reveal the influences behind them, and often become operative, to the serious damage of the interests against which they are aimed, before their real purpose is understood or appreciated. Bills of this class appear in every session of every State Legislature, and it is through them that the more or less clever conspirators of the labor unions do their most dangerous work.

A striking illustration of this class of legislation is a bill now under consideration in the Legislature of Indiana, supported by voluminous petitions, which provides that no freight locomotive on any railroad in that State shall carry steam at a pressure exceeding 170 pounds. Even for the attainment of its ostensible object—to reduce the risk of explosion in locomotive boilers, and thus protect the lives of engineers and firemen—this would be a very foolish measure. It applies as well to

a boiler which reaches the danger line at 150 pounds as to one which under 200 pounds would show as great a factor of safety as the most exacting inspector would prescribe. Most locomotive engines of modern types would find their efficiency seriously crippled by this arbitrary and wholly unnecessary requirement. They need steam at from 180 to 200 pounds for grade climbing with heavy loads, and would be often stalled if the engineer had to keep one eye on his steam gauge to see that the legal maximum of 170 pounds was not exceeded. This, however, is just what the framers of the bill are trying to accomplish. They want to compel the railroads to run more trains of fewer cars, to the end that more train hands will be required, and the union which looks after the interests of that class of labor be strengthened. We learn from local sources that they have so impressed the farmers with the advantages of an increased number of freight trains on the railroads carrying their products that petitions for the enactment of the bill are being signed by thousands in the agricultural districts. The Indiana farmers must be credulous, indeed, to believe that anything which diminishes the efficiency of the motive power of a transportation company will in any way benefit the shipper, or that if it takes two trains to carry the freight which is now carried by one train, rates will be lowered in consequence or the freight service rendered more efficient.

Whether this particular bill will become a law is, from the viewpoint of this discussion, unimportant. It is of interest chiefly as a type of the dangerous legislation which is inspired by a desire on the part of organized labor to further what it deems its interests, at any cost of injury to the corporations upon whose prosperity the welfare and development of States so largely depend. Those who attempt to study "the workings of the legislative mind" in such matters waste their time. The legislative mind, if there is such a thing, does not work; it is worked by those who claim to represent the labor vote.

## Changes in the Circulation.

In the past 12 months the total amount of money in the country, in the Treasury and in circulation, including Treasury bullion, but not including certificates, which merely duplicate other forms of money, increased \$198,159,311. In ratio to population it increased from \$25.98 per head to \$28.38. The increase is not so important as the fact that nearly all the changes in the various forms of currency have been for the better. Gold has increased in round number \$90,000,000 through imports and our own production. National bank notes increased almost exactly \$100,000,000 on account of the legislation of last March. These notes are issued in accordance with commercial demand instead of by an arbitrary act of Congress, and they are not directly a liability against the Government and a lien on its stock of gold. Although this form of currency contracts slightly when the demand for currency declines, yet it has some elasticity, and is the only element of our currency that does possess it, except that the gold increases by importation and production and may decrease by exportation. The silver dollars have increased \$30,000,000, on which the country cannot congratulate itself, but the increase is small in comparison with the total amount of currency and an end to the manufacture of silver dollars is approaching. The subsidiary silver has increased \$8,000,000, which is certainly a matter of public convenience, for when small change is in excessive supply it very promptly gets back to the Treasury for redemption. The United States notes are of fixed volume, and this can only be changed by law.

The Treasury notes, or "Shermans," have decreased about \$29,000,000. In some respects this was the most dangerous element that was introduced into our circulation. They were legal tenders; they had to be redeemed in gold in order to maintain the existing monetary standard in the country; they were as originally issued to increase indefinitely in volume and yet in proportion as they were issued the burden of silver in the Treasury increased and nothing was done to increase the stock of gold. Virtually they were gold notes issued against deposits of silver, and their contraction to very much less than half of their original amount is a subject for congratulation. Except for a small addition of silver dollars the changes of a year have decidedly strengthened the currency.

But in an interview this week on the Lovering bill to permit the issue of a small amount of bank notes not secured by bonds, but by a guarantee fund and the assets of the banks, Secretary Gage has directed attention to a possible danger from the lack of elasticity in our circulation. The bond secured notes have never contracted readily when unusual demands for currency subsided. The notes proposed by the Lovering bill would be likely to retire more promptly, but they would not be substituted for the bond secured notes, and they would not be added rapidly. They could add little for some time to the elasticity of the currency. Secretary Gage's suggestion was that at present the volume of the currency is very large, and should the activity of business subside it would be redundant, but about the only contraction that could occur would be the export of gold. At present we could spare a good deal of gold, but the process of increasing the currency by the addition of paper and contracting it by the subtraction of gold is one that ought not to be carried very far. Ultimately all Government paper will be retired, and the banks will have to redeem their own notes in gold and a foreign demand for gold will fall immediately upon them. They could check undue foreign exports, just as the European banks now do, by raising the rate of discount. In the meanwhile we may add more paper to the circulation than is needed all the time and so encourage gold exports.

## CORRESPONDENCE.

### James Wood and the Compression of Fluid Metals.

To the Editor: I notice in your paper of January 31, 1901, an article on the "Compression of Fluid Metals," written by A. E. Fay, in which he refers to my claiming the distinction for my father, James Wood, of having first introduced a powerful press worked by a double threaded screw, through gearing, with a frictional clutch on the head of the press so as to release the pressure when the maximum pressure was obtained. This press was made in 1856 and was worked, as near as I can remember, by an 8 or 9 inch double threaded screw. The main housing of the press weighed something like between 50,000 and 60,000 pounds. I am not aware that the press, up to the present date, has been changed from the position it was put in for the compression of fluid copper at the Broughton Copper Works, Manchester. My father afterward put in a press of the same construction and dimensions, and also the refinery attached for the melting of metals for the press, the engines, gearing and everything connected therewith, for John Wilkes & Sons of Birmingham and later one for Parke & Co. of the same city, all for casting copper rollers by fluid compression for calico printing.

I was not aware of James Hollingrake's invention spoken of by the writer, who, he states, had a patent in 1818, for compressing fluid metal. (I would very much like to have the number and exact date of that patent so that I may look it up.) Nor do I think my father was aware of it; if the invention was patented it had never

been put into operation, and I think if it had been called to the attention of Mr. Barton at that early date he would have been likely to have put it into operation, as he was a progressive as well as a rich man at that time. Instead of which, Mr. Barton used the steam hammer for compressing the metal between wedged dies after it had been cast, and after doing this they had rolls for rolling them to make the rollers more solid. A. E. Fay also stated that Everitt patented in 1857 the steam hammer process and wedged dies, same as Barton used. About this I know nothing, although Everitt's works was the next works to John Wilkes & Sons, where James Wood put in his second press, which was in 1859.

James Wood was manager for Nasmyth, I think from 1849 forward for some years, and was doing work for John Barton, who was then the owner of the Broughton Copper Works, at that time. It was not until Mr. Barton's failure that the reconstruction of his works took place, and it was afterward known as the Broughton Copper Company, under the management of James Morris at that time, and James Wood was intrusted with the whole reorganizing of the machinery for the works, and it was at this time that he made his first press for the compression of fluid copper.

With all due deference to the references cited by Mr. Fay in regard to the parties he refers to, I am still under the impression, from what James Wood did and accomplished, and his interviews with Sir Joseph Whitworth, as stated in my letter of September 20, 1894, that the compression of fluid steel was his original idea as well as the fluid copper, the latter having been brought to a successful issue by him undoubtedly before interviewing Sir Joseph Whitworth. Wm. H. Wood.

MEDIA, PA., February 8, 1901.

### International Patent Conference.

Secretary of State John Hay has asked Congress to appropriate \$10,000 to enable the United States to arrange for an international conference to be held in Washington this year for the protection of patents, trademarks and other industrial property. This step is taken under the terms of the international convention concluded in Paris in 1883, to which the United States is a party, which provides that the convention shall be submitted to periodical revisions for the purpose of introducing improvements, and that, with this object in view, conferences shall take place successively in one of the contracting States between the delegates of the said States.

In pursuance of this provision, a conference was held at Brussels, Belgium, in December last, which adjourned to meet at Washington on a date to be arranged by the Government of the United States. The duty of arranging for the conference to be held devolves, therefore, under the convention, on the United States. Such arrangements include the gathering and distribution of the propositions for amendment, all of which must be completed at least six months before the meeting. In view of the fact that the members of the Union are widely separated, it requires considerable time to make the necessary arrangements. In conclusion, Secretary Hay says that in order that the duty of the United States may be fulfilled in a timely and suitable manner, it is necessary that early provision should be made by Congress for vesting in the Secretary of State the appointment of persons as delegates to the conference, and that an appropriation should be made for the expenses attending the preparations for and the sessions of the conference.

**The Pittsburgh Pulley Company.**—The new plant of the Pittsburgh Pulley Company, located at Pulleydale, on the Panhandle Railroad, about 7 miles from Pittsburgh, has been started up. The concern are making a full line of pulleys from 6 to 60 inches in diameter and up to 24 inches face. The equipment of the plant is modern throughout, and the concern are prepared to make prompt deliveries of pulleys. The main office of the company is in the Lewis Block, Pittsburgh. H. P. Goff is president, W. S. Horner treasurer, and George S. Phillips secretary.



## Lake Iron Ore Matters.

DULUTH, MINN., February 9, 1901.—That the Chicago, Milwaukee & St. Paul Railway intends to make a sharp fight for the ore traffic of the Menominee range, as has been stated in this correspondence, is further evidenced by the fact that it has just left contracts for material for an extension of its new ore dock at Escanaba, which was not completed until last fall and over which not a pound of ore has yet been dumped. Not only this, but it is extending its lines to cover nearly all the leading points of the Menominee range and will also reach into the Marquette. It is now at work on a line that will run to Quinnesec, and will permit it to reach the mines of Iron Mountain, Iron River, Crystal Falls, Norway, and practically every center on the range. The Chicago & Northwestern will do well to look to its laurels.

The Duluth, Missabe & Northern is building 11 miles of line along the Mesaba range to reach the Stevens and other mines near old Mesaba station on the Duluth & Iron Range road, the ore from which is under contract to the Missabe.

The original Lake Superior iron mine, the Jackson, which sent out ore to a local bloomery in 1846, and to New Castle, Pa., in 1848, is now permanently idle. The Jackson was the first discovery of iron in Michigan, the honor of the find being claimed by E. S. Rockwell and S. T. Carr, assistants of Dr. Houghton, in 1844. Its first shipment of more than a few tons was 70 tons in 1852 to Sharon, Pa., and so rich did the ore prove and so well did it work in the furnace that ironmasters were wild for more. In 1852 there was no canal at the Sault, and the ore was carried the length of Lake Superior in a small schooner, unloaded and carted by ox teams down the rapids and there again put aboard boat. Since then the Jackson has been an active producer, with a total to date of 3,750,000 tons. Its high grade ores are now exhausted. It needs something like this event to draw attention to the change that the few years have brought to the mining industry, and the glance to a time when a cargo of 100 tons was immense, and all the operations of the miner were conducted in the most primitive manner, to realize what has taken place. And think of a Lake Superior mine of to-day that would not produce more than an average of 75,000 tons annually.

What effect the probable changes in the ownership of steel works throughout the country may have on the Lake Superior industry is a much discussed question along the ranges. That it will narrow the market for independent mines still more is not generally doubted, but the further effect is not distinctly seen.

### Menominee Range.

On the Menominee range the Oliver Iron Mining Company have taken charge of the Mansfield, and will improve it materially. The company are after another mine of the Crystal Falls group, the Columbia, and the deal for purchase may have been closed before this. It is a good property, was formerly known as the "Shafer," is a producer of a high phosphorus ore, running about 60 per cent. iron and very wet. It belongs to the Huron Iron Company, whose owners are the same as the owners of the Mansfield. It has a fine four-compartment vertical shaft sunk through the jasper, and is in condition to make a large production. It has so far shipped about 700,000 tons. There is more exploration on the Menominee than for some months, a revival of the times of two years ago seeming to be on. The Lotta is under development; the Forks property is to be shown up, by a hole 800 feet deep; the Spencer property near the old Indiana, and now called the "Gladstone," is showing well, and development is progressing there; the Oliver Company will make another attempt to find something at the Gibson and will start a new shaft, and some other new work is under way. The Lincoln is shipping heavily all rail to Milwaukee and Mayville, and some other shipments are being made.

### Marquette Range.

On the Marquette the Oliver Company have ceased operations at the Riverside mine, abandoning the prop-

erty. At the Dexter a diamond drill will be put to work exploring. The Negaunee has completed a new shaft that has been in progress from both ends for some months. It is 500 feet deep and three compartment. Some 1300 gallons of water are coming out of the shaft per minute, and the mine is furnishing 2200 gallons, which is only half the volume of water of a few months ago. The mine is to ship very heavily this year, and the new shaft will be in commission by May. Explorations will be carried on along the Cascade range, south from Negaunee, all the season. The East Jackson has been secured by B. Neeley, and the Lucy is going into the hands of the Mayville Furnace (Northwestern Furnace Company). Both will be developed, probably by the same interest. But by far the most important work about Negaunee is that of the Cleveland Cliffs, in the Maas explorations, where five diamond drills are working day and night. The cost of the options held by Maas was about \$250,000 and the exploration, profits to Maas, &c., will make the cost price to Cleveland Cliffs more than \$300,000. But ore is known to exist there, for at a depth of 575 feet, it was found by Maas, and at a depth of 1075 it was again found 20 rods away. The second find was of a very fine Bessemer grade. In this second find the drill was in ore 90 feet when it stuck fast. Improvements have been made at the Cleveland Lake mine, including the installation of cars for the stock pile of a new and automatic pattern. Many changes and improvements are being made at the Lake Superior Company's mines. There seems to be less stock piling, but more underground development, so that less ore will be on surface in the spring, but more can be handled during the summer. This will permit a more economical output where there is plenty of shaft room.

### Mesaba Range.

On the Mesaba range the Sharon Ore Company are very busy getting their mine into shape, and incidentally preparing to smash the record of underground mines for a first year. The first shovel was stuck into dirt here about August 1; now there is a hole some 25 feet deep and nearly 450 feet square and a shaft is down 90 feet. There are 50 feet of overburden at this mine, and this will be removed as fast as possible for an area of 450 feet square. Off to one side the shaft will be sunk 70 feet into ore, and a level cut from which drifts will be driven into the ore, and as fast as the strippers overhead remove the earth raises will be lifted to the surface of the ore and mining by the milling process commenced. The shaft will carry two 6-ton skips hung in balance, and the company hope to ship 250,000 tons this year. The surface so far removed is a gravel, but the rest of the overburden is fine sand. The ore is a Bessemer, running about 61 per cent. iron and from 0.035 to 0.040 in phosphorus. Physically, it is as good an ore as has been opened on the Mesaba. There are not less than 15,000,000 tons in the deposit, which is about 150 feet deep, and the product will go to the new steel works at Sharon, to which the mine belongs.

The sale of the lease of the Chisholm mine, near the west end of the range, for \$75,000 bonus and an advance royalty of 10 cents a ton, is the highest price yet paid for any Mesaba mine, quantity and quality considered, and is an interesting comment on the way ore properties are sought for. The American Steel & Wire Company will pay 35 cents a ton above the cash bonus on all the ore of the mine, most of which is non-Bessemer. Work has commenced at the mine. The Penobscot expects to double its 1900 production this year, and is developing to that end. Explorations are under way in 15, 58-19, where ore is supposed to exist. The Biwabik mine is steadily stripping for the year's operations, and will mine very heavily.

All the Rockefeller mining and transportation companies in this region have held their annual meetings, re-electing former directors and officers. There is an attempt to attract attention with a view to the coming political campaign by members of the board of county supervisors, who call into question the validity of the bond issue given by St. Louis County to the Duluth, Missabe & Northern road. There is not the slightest



question of the validity of these bonds, and the county has received *quid pro quo* for all it paid long before this. The bonds cannot be successfully attacked. D. E. W.

### The Babcock Free Metal Bill.

WASHINGTON, D. C., February 12, 1901.—Representative Babcock of Wisconsin on the 11th inst. caused a sensation in the House of Representatives by introducing a bill providing for the transfer to the free list of the greater portion of the metal schedule of the Dingley act. Had this proposition come from a member of the minority or from a less prominent member of the majority it would have attracted but little attention, but Mr. Babcock's prominence in the political and parliamentary councils of his party and his high standing in the commercial world served to attract great attention to the measure, and to arouse no little speculation as to the motive of its author. That the measure will not be favorably reported from the Committee on Ways and Means, to which it was promptly referred, can be very positively stated. That it was introduced for much the same purpose that inspired the Anti-Trust bill which was reported from the Judiciary Committee of the House just before the adjournment of the last session is almost equally certain.

Mr. Babcock is the most prominent Republican member of the Wisconsin delegation in the House. He was elected to the Fifty-third Congress, and has since served eight years in the House, and now holds his seat by a majority of more than 6000. For the past six years he has served as chairman of the Republican National Congressional Committee, which has charge of the campaigns of Republican Congressmen in every district in the United States. He is credited with having made a comfortable fortune in the lumber business, one of the most highly protected of American industries producing raw materials. Throughout his service in the House he has exhibited a grasp of large business problems and a full knowledge of up to date business methods which have marked him as one of the most progressive men in Congress. For a number of years he has filled the important position of chairman of the Committee on the District of Columbia, which originates the legislation for the government of the Capital city, and when Representative Dolliver was recently elected to the Senate Mr. Babcock was appointed by the Speaker to his place on the Ways and Means Committee, a selection that was received with many expressions of approval on both sides of the House. While Representative Payne of New York has been the acknowledged parliamentary leader of the party on the floor, Mr. Babcock as chairman of the Congressional Committee has been equally as influential in all conferences, caucuses and other meetings for the discussion and formulation of party policies.

The measure as presented in the House by Mr. Babcock provides for the transfer to the free list of the following paragraphs:

#### Schedule C.—Metals and Manufactures Thereof.

123. Bar iron, square iron, rolled or hammered, &c.
124. Round iron, in coils or rods, &c.
125. Beams, girders, joists, angles, channels, and other structural shapes, &c.
126. Boiler or other plate iron or steel except crucible plate steel and saw plates, &c.
127. Iron or steel anchors or parts thereof.
128. Hoop, band or scroll iron or steel, not otherwise provided for, &c.
129. Hoop or band iron or hoop or band steel, cut to lengths for cotton ties, &c.
130. Railway bars of iron or steel, &c.
131. Sheets of iron or steel, common or black, &c.
132. All iron or steel sheets or plates, &c., when galvanized or coated with zinc, &c., except tin plates.
135. Steel ingots, cogged ingots, blooms, slabs, billets, &c.
136. Wire rods, including rivet, screw, fence, and other iron or steel wire rods.
137. Round iron or steel wire, &c.
160. Cut nails and cut spikes of iron or steel.

162. Wire nails made of wrought iron, or steel.

171. Wheels for railway purposes or parts thereof.

It will be noted that Mr. Babcock's measure does not propose to repeal the duty on any of the more highly manufactured products of iron and steel, except on nails and wheels for railway purposes.

When asked for a statement as to the motive that induced him to introduce this bill, Mr. Babcock said to the correspondent of *The Iron Age*:

"I will say to you very frankly that I have introduced this bill because I believe that such a measure is necessary in order to protect the consumer from the exactions of great trusts which are rapidly absorbing the entire iron and steel business. The duties provided by the Dingley act were undoubtedly necessary a number of years ago when the iron and steel business was an infant industry. It has now grown to enormous proportions, and is probably the most extensive manufacturing business in the country. We are advised that the biggest consolidation yet attempted is now about to be effected in the steel business, and from all evidence that can be gathered it seems clear that the protection afforded by the Dingley act is no longer necessary.

"Without mentioning any names I am at liberty to say that this measure has been drafted after consultation with the members of the House who prepared and reported the Anti-Trust bill at the last session. I am confident that my bill will be favorably reported early in the new Congress in the event that there is not sufficient time for its favorable consideration at the present session. Four out of five members of the House are for the bill, and I believe it will pass both Houses in the new Congress.

"Unless we can enact some such legislation how are the people of my State, for example, to secure iron and steel products at fair prices? The great West is in hearty sympathy with this movement, and I believe if the bill could be taken up to-morrow it would go through the House with the greatest ease."

It is learned that Mr. Babcock has conferred with several members of the House Committee on the Judiciary who drafted the Anti-Trust bill passed by the House last session, and which is now pending in the Senate Committee. These members are believed to include Chairman Ray of New York, and Messrs. Jenkins of Wisconsin, Overstreet of Indiana, and Littlefield of Maine. It will be remembered that these four gentlemen were instrumental in the formulation of the Anti-Trust bill, which it has been freely alleged was put through the House for the political effect it would have upon the elections. Mr. Babcock is now said to harbor the laudable ambition to occupy a seat in the Senate, and there can be no doubt that such a measure as that presented by him would be applauded by many of his constituents in Wisconsin. It is not to be expected, however, that his Republican colleagues on the Ways and Means Committee or in the House will go to the length of taking favorable action upon his bill for the sole purpose of advancing his Senatorial prospects.

W. L. C.

**R. D. Nuttall Company.**—The R. D. Nuttall Company of Pittsburgh, makers of cut gears, expect to more than double their capacity for the manufacture of gears and for this purpose have already placed some orders for equipment. Included in these orders is one rack cutter to cut teeth of one pitch. Another is a worm wheel gear cutter of 72-inch capacity, while the firm have also made arrangements for cutting Hindley work. The above orders for equipment are only initial ones, and will be followed with more orders by this firm, as it is their intention to more than double their capacity. The business of this concern in the making of cut gears has grown to very large proportions, and they are taxed to their utmost at the present time to get out their orders. With the additional facilities they expect to be able to take care of all the business that may be offered them. Work on the extension of their capacity will go forward as rapidly as possible. The shops of this concern in Pittsburgh were formerly occupied by the Westinghouse Electric & Mfg. Company, and are very complete in equipment and details.

# THE GREAT CONSOLIDATION.

## Practically the Whole of the Steel Trade of the Central West Under One Control.

If the plans which are now maturing are carried out, one group of men will control what is practically the whole steel trade of the Central West. It is understood that the officers of the following companies have submitted to the syndicate headed by J. P. Morgan detailed financial statements which are to be the basis of participation in the new concern:

CARNEGIE STEEL COMPANY.  
FEDERAL STEEL COMPANY.  
AMERICAN STEEL & WIRE COMPANY.  
ROCKEFELLER ORE AND TRANSPORTATION INTERESTS.  
NATIONAL STEEL COMPANY.  
AMERICAN TIN PLATE COMPANY.  
AMERICAN STEEL HOOP COMPANY.  
AMERICAN SHEET STEEL COMPANY.  
NATIONAL TUBE COMPANY.  
AMERICAN BRIDGE COMPANY.

When the participation has been determined and has been accepted by the respective boards of directors, circulars will be issued to the stockholders of each of the companies announcing the terms and inviting them to what in most cases will be merely an exchange of securities.

It is understood that the only important single cash item is between \$20,000,000 and \$25,000,000 in cash which Mr. Carnegie is to receive to-day as a part payment for his stock interest in the Carnegie Steel Company. The balance is to be paid to him in the form of 5 per cent. general mortgage bonds at the rate of \$1500 for each \$1000 in stock.

It is understood that the minority holders of the Carnegie Steel Company have not yet been arranged for, but the report is current that they are to receive 150 per cent. of new preferred stock and 150 of new common stock.

So far as the other companies are concerned, the proposition is largely a blind pool. It has been claimed that the fairest basis would be to take the average prices on the exchange of the common and preferred stocks for a series of months prior to the recent movements created by the starting of negotiations.

It is understood that a number of banking interests have hesitated about entering the underwriting syndicate.

One of the questions which has arisen is that the Moore group cannot, without the consent of two-thirds of both classes of stock, permit of mortgaging the properties, so that there could be a serious difficulty in extending the bonds to be issued to Mr. Carnegie to them.

It is understood that the capital stock of the new company will be in the neighborhood of \$800,000,000, but it is doubtful whether, to begin with, all of the companies named will be taken in. It may be considered more expedient to arrange for their entry later on, this referring particularly to those which are at the finishing end.

The negotiations are now at a critical point and it is possible that one or more of the concerns invited to enter the new consolidation may not accept the terms offered. The conviction is expressed by those who are in a position to know the facts that the valuations will be on a close basis and that there will not be a deluge of water. It is asserted that while J. P. Morgan & Co. are acting as the promoting bankers, there will not be the underwriting with its attendant inflation with which recent flotations have made us familiar. In reality the whole undertaking has been forced by the desire to protect existing interests seriously threatened as they were by possible warfare, rather than by a desire to unload the properties upon the public at inflated prices.

The iron trade at large is little concerned as to the financial features of the undertaking. The cardinal point is the

### Enormous Concentration of Power

which the proposed plans imply and the manner in which it is to be wielded. The latter depends largely upon the personnel of those who will be in control of the management. If the new consolidation turns out to be an unwieldy colossus weighed down with flabby tissue in the form of huge fixed charges created by watered stock, then the future lies with a coming swarm of outsiders. If the great consolidation seeks its future in crowding prices to the highest notch, rather than in aiming at a progressive reduction in costs as the basis of steady lowering in market values, then it must ultimately succumb. Enormous as will be the power of the new organization, the fact remains that it will not have absolute control, nor will there be a limit to its despotism.

It may be well to examine somewhat more closely the resources and their share in the total of the country.

### Ore Interests Controlled.

To begin with, the Minnesota Iron Company own or control the following mines, which produced the following quantities of ore in 1900:

	Tons.
Minnesota .....	325,020
Chandler .....	644,801
Fayal .....	1,252,504
Auburn .....	263,692
Elba .....	121,707
Genoa .....	253,651
Total.....	2,861,375

The company own also the Corsican and the Elba, which did not produce in 1900, and the Union, a new mine leased to the Republic and Steel Hoop companies.

The Oliver Mining Company have the following interests, in which, so far as the Bessemer ores are concerned, the National Steel Company have one-sixth of the product for a few years more to come, the original term of the Oliver & Snyder Steel Company having been five years.

	Tons.
Pioneer .....	450,794
Savoy & Sibley.....	175,116
Zenith .....	60,089
Ohio .....	172,597
Mountain Iron.....	1,001,324
Sparta .....	202,144
Missabe Mountain and Lone Jack.....	244,876
Norrie .....	666,389
Pabst .....	239,242
Aurora .....	193,111
Tilden .....	481,909
Mansfield .....	90,155
One-half Pewabic (374,043).....	187,022
Three-quarters Queen group (398,298).....	298,700
Riverton .....	71,004
Total.....	4,534,872

To this must be added the three-quarter interest in the Lake Superior group, for which we have not the figures.

The Oliver Company control, also, the Stevens and Norman, the Hartford and the Lac Fume. The Sparta, which in 1900 raised 202,144 tons, is leased to Pickands, Mather Co.

The Rockefeller interests, represented by the Lake Superior Consolidated Company, include the following producing mines:

	Tons.
Adams .....	777,346
Duluth .....	128,587
Lake Superior.....	284,023
Pillsbury .....	101,032
Sellers .....	56,280
Total.....	1,347,268



The company also control the Aetna, the Day and the Minnewas, which did not produce in 1900.

The National Steel Company have the

	Tons.
Chapin .....	929,937
Winthrop .....	148,945
Total.....	1,078,882

The company have also a share in the Biwabik which in 1900 mined 924,868 tons.

The American Steel & Wire Company own and operate the

	Tons.
Saunty .....	68,500
Clark .....	63,071
Atlantic .....	135,955
Negaunee .....	126,829
Moore .....	4,648
Hilltop .....	6,410
Cuff .....	38,209
Total.....	443,622

The company have also acquired the Chisholm and the Atikokan, the latter in Canada.

The National Tube Company have only small ore interests in the Gogebic range.

The American Steel Hoop Company have a fifth interest in the Mahoning property, which in 1900 mined 911,021 tons.

Summarizing we have the following ore tonnage for 1900:

	Tons.
Minnesota Iron Company.....	2,861,375
Oliver Iron Mining Company.....	4,534,372
Lake Superior Cons. (Rockefeller).....	1,347,268
American Steel & Wire Company.....	443,622
National Steel Company.....	1,078,882
American Steel Hoop Company.....	200,000
Total.....	10,465,419

Total production Lake Superior ore mines.....19,059,393

This total does not really represent the entire output controlled, and it is fair to carry it up to, say, 11,000,000 tons, so that more than one-half of the total product is in possession of the consolidation. Then the possession of railroad lines places outside mines in certain districts at a serious disadvantage. Most of the companies also possess important explorations and vast areas of undeveloped mineral lands.

#### Transportation Interests.

As for transportation interests, it must be remembered that the Minnesota Iron Company own the Duluth & Iron Range Railroad, while the Rockefeller interest control the Duluth, Missabe & Northern, both having ample dock facilities.

Then there are the Rockefeller, Carnegie and American Steel & Wire fleets of modern lake steamers, and the Carnegie terminals at Conneaut. The Oliver Company own 12 ships, the Minnesota 22, the Rockefeller interest 59, the Wire company 13, and the National Steel Company 6 ships, in all having a capacity of 12,000,000 tons. Furthermore, there will be a part of the property the Pittsburgh, Bessemer & Lake Erie and the Pittsburgh terminal roads of the Carnegie Company.

#### Fuel.

To the enormous and valuable coke interests of the H. C. Frick Coke Company in the Connellsville region must be added the coal and coke interests of the Federal, American Steel & Wire and National Tube Company. In this connection it may be stated that negotiations are under way by which gas interests in Chicago are to build 900 by-product ovens in that city, the coke, made from Indiana or Illinois coals, to go to the blast furnaces of the Illinois Steel Company.

Through its control of the Connellsville region the new consolidation would have a powerful influence upon the producers of foundry iron in the Central West, and would also be the main source of supply of the coal used in the cupolas of the foundries over a great part of the country.

#### Pig Iron.

The equipment of the constituent companies is very large for the manufacture of pig iron, and is still being added to, there being now nearly completed the Neville Island Furnace of the American Steel & Wire Company, who quite recently blew in also a new stack at Cleveland. The Carnegies are adding two new blast

furnaces, the National Steel Company are building one at Youngstown and two in the Wheeling district and the Illinois Steel Company are constructing two in Chicago. Of course, some of these really take the place of out of date stacks still in commission, but the capacity is being materially added to, nevertheless.

Some good idea of the magnitude of the operations of the concerns named may be obtained by noting the fact that during the second half of 1900 the furnaces of the companies in the consolidation produced about 2,650,000 tons, out of a total of 5,974,000 tons of coke and anthracite iron made in the country during that slack period. A close estimate of the capacity of the furnaces of the consolidation, not counting the plants under construction, would be 125,000 tons per week. This is making allowance for the fact that at all times a number of blast furnaces must be out of commission for repairs. It would be fair, therefore, to place the annual capacity at 6,500,000 tons, to which the near future would add considerably.

With the exception of some foundry and forge iron made by the Illinois Steel Company and the American Steel Hoop Company and some manganiferous and special irons produced for sale by the Carnegie Steel Company, the whole of the pig iron product has gone into steel making, and then even has not been sufficient in busy times. This has given opportunities to the outside merchant Bessemer furnaces in the Central West for marketing product. It is quite evident that for technical reasons alone the tendency will continue to be to make the pig iron at the steel works. This means that the outside merchant furnaces must seek another outlet. To what extent they will go into the foundry iron trade remains to be seen. It may depend to some extent to the encouragement given by the consolidation in the way of furnishing ore and coke at prices which will permit of effective competition with the Southern producers.

#### The Billet Trade.

A consolidation of the concerns named will practically eliminate from the market both the largest buyers and the largest sellers of steel in the form of billets and sheet bars. In the Central West the only really large makers of billets independent of the consolidation will be Jones & Laughlins, Limited, of Pittsburgh. Like all the great works, they convert a steadily increasing proportion of steel into forms higher than the crude steel.

The question of a supply of steel for the outside smaller rolling mills promises to become increasingly grave. The consolidation, with their enormous and varied interests in the finished forms, will naturally demand prices for the intermediate product which will place outsiders at a disadvantage. Practically all of them have long faced this problem, and have either built or are about to build their own plants, unless they merely reroll scrap or puddle. Of course, it is the basic open hearth, with its capacity to adjust itself to moderate output, which is the salvation of such concerns.

Before entering upon a review of the principal lines of finished products we may recall to mind the leading mills which will be ranked as "independents."

#### Independent Plants.

JONES & LAUGHLINS, LIMITED, Pittsburgh. Practically self contained. Sellers of steel billets, bars, structural material, light rails and specialties.

REPUBLIC IRON & STEEL COMPANY. Consolidation of bar mills. Largely self contained, owning some ore, producing some pig iron and making steel billets.

OTIS STEEL COMPANY, Cleveland, Ohio. Producers of steel plates, make their own steel.

CAMBRIA STEEL COMPANY, Johnstown, Pa. Largely self contained. Makers of steel rails, structural material, bars and specialties.

CARBON STEEL COMPANY, Pittsburgh. Makers of open hearth steel and steel plates.

WHEELING IRON & STEEL COMPANY. Producers of pig iron and steel and different lines of finished products.

OLIVER IRON & STEEL COMPANY. Produce neither pig iron nor steel. Make bars and specialties.

ASHLAND STEEL COMPANY, Ashland, Ky. Have no



ore. Produce pig iron, steel, wire rods and wire products.

SHARON STEEL COMPANY, Sharon, Pa. New plant. Control ore, will produce pig iron, open hearth steel, tin plate, sheets and hoops. Largely self contained.

CRANE COMPANY, Chicago. Do not make pig iron or steel. Large manufacturers of pipe.

NATIONAL ENAMELING & STAMPING COMPANY, Granite City, Ill. Open hearth plant. Manufacturers of sheets for own consumption.

COLORADO FUEL & IRON COMPANY, Pueblo, Col. Alone in territory west of Missouri River. Self contained. Produce rails chiefly.

Besides these leading concerns there are some larger works building, like that of the Union Steel Company, at Donora, Pa., and there are a considerable number of smaller plants, building or built, to roll sheets, bars, tin plate, wire rods or hoops.

In the East the great majority of the plants remain independent. Conspicuous among them are:

LACKAWANNA IRON & STEEL COMPANY, Scranton, Pa. Largely self contained. Manufacturers of steel rails and billets. Are building a very large steel and rail plant at Buffalo, N. Y., which will have a surplus of steel, and may be the nucleus of a series of independent enterprises.

PENNSYLVANIA STEEL COMPANY, Steelton, Pa., and MARYLAND STEEL COMPANY, Sparrow's Point, Md. Control ore mines in Cuba. No coke as yet. Produce necessary pig iron and steel, mostly converted into rails, structural material and track material. Furnish steel to

CENTRAL IRON & STEEL COMPANY, Harrisburg, Pa. Large producers of steel plates.

BETHLEHEM STEEL COMPANY, South Bethlehem, Pa. Steel makers, sellers of special billets. Makers of armor, guns and high class forgings. Practically withdrawn from steel rail and general finishing trade.

LUKENS IRON & STEEL COMPANY, Coatesville, Pa. Large producers of open hearth steel and of steel plates.

PHENIX IRON COMPANY, Phoenixville, Pa. Produce open hearth steel, roll beams and shapes, and build bridges and buildings.

READING IRON COMPANY, Reading, Pa. Do not yet produce steel. Large manufacturers of pipe.

PASSAIC ROLLING MILL COMPANY, Paterson, N. J. Manufacturers of steel for own purposes. Roll shapes and build bridges and buildings.

TIDEWATER STEEL COMPANY, Chester, Pa. Produce pig iron and steel.

DIAMOND STATE STEEL COMPANY, Wilmington, Del. Manufacturers of open hearth steel, sellers of billets. Manufacture bars, track material and plates.

AMERICAN IRON & STEEL MFG. COMPANY, Lebanon, Pa. Produce no steel, puddle iron, roll bars. Make track material, bolts and nuts and rivets.

There are a number of smaller mills in the Eastern territory, many of which are independent when that term is applied as referring to the purchase of steel billets, their raw material being mill or basic pig iron, which is beyond the control of the consolidation, and scrap, which flows into the local markets.

We have not enumerated the Troy Steel Company, at Troy, N. Y., because there is a possibility that this concern, now practically controlled by Mr. Morgan, may be put into the consolidation. Nor have we alluded to the works which manufacture steel tires, like the Standard, Midvale or Latrobe, because the consolidated company does not touch this branch. No reference has been made to the crucible plants, like the Crucible Steel Company of America, which, it is true, produce some steel plates, because that is a field by itself.

The South has been little touched by any of the consolidations in the steel trade or the finished rolling mill products. The conspicuous plants are the steel works of the Tennessee Coal, Iron & Railroad Company, and the Alabama Steel & Wire Company, at Ensley, Ala., and the works in the Richmond district.

#### The Steel Rail Trade.

For many years the interests in the rail trade have co-operated under agreements varying in detail, but usu-

ally based upon a certain division of tonnage, with an understanding, more or less binding, as to prices of the mills in the association. Three are now represented in the consolidation, first being the group controlled by the Illinois Steel Company; second, the Carnegie Steel Company, and, third, the National Steel Company, with their Youngstown plant. These together are entitled to about 68 per cent. of the tonnage originating in the United States, Canada and Mexico. The other works are the Lackawanna, Pennsylvania and Maryland, Cambria and Colorado. The Tennessee Company are building a plant and are understood to have taken some orders. With so large a proportion of the capacity controlled by one interest, and possessing the largest mills, the position of the outside works is more difficult than it has been. Nor is new competition in this field to be very seriously considered, since it must be based upon the possession of enormous plant and the control of raw materials.

#### The Structural Trade.

Aside from the Carnegie Company, the largest single maker of structural steel, concerns in the proposed consolidation are only of minor importance. It remains to be seen whether the Pencoyd Iron Works, which have retained their identity separate from the American Bridge Company, will or will not become an integral part of the new aggregation. It is the identity of interest between the two mills named and the largest consuming interest, the American Bridge Company, which gives the new consolidation its particular significance in this branch. It would be no more than natural if the new company worked in the direction of producing all the material required by the allied interest, and in that case new development might, quite likely, take form first in the Chicago district. The leading outside mills are Jones & Laughlins, Limited, the Cambria Steel Company, the Phoenix Iron Company and the Passaic Rolling Mill Company. In this branch associations in different forms have been a feature of the trade nearly continuously for many years.

#### The Plate Trade.

In the plate trade the new consolidation would possess some of the largest mills, notably those of the Carnegie and Federal companies, the American Steel & Wire Company contributing some capacity. The principal outside mills are the Otis, Lukens, Central, Worth and Park (Crucible Steel Company). Some considerable advantage is supposed to accrue through the existence of close relations as buyers and sellers between the Carnegie and Federal Steel Companies and the Pittsburgh and Joliet plants of the Pressed Steel Car Company.

#### Sheets and Tin Plates.

Outside of the works belonging to some consumers and a few independent plants and dipperies, the American Tin Plate Company have pretty full control of the situation. In the sheet industry the American Sheet Steel Company have only a few small competitors in the Central West, and a number with larger tonnage in the East.

#### Bars and Hoops.

Some of the mills in the proposed consolidation produce quite largely of steel and iron bars. This is notably true of the American Steel Hoop Company, the Carnegie Steel Company and the Federal Steel Company. Outside of that circle are the Republic Iron & Steel Company, Jones & Laughlins, Limited, the Cambria Steel Company, and a number of smaller plants in the West, and finally all of the mills of the East.

Hoops and cotton ties are made by the American Steel Hoop Company and the Federal Steel Company, the American Steel & Wire Company also having a limited capacity. The outside works are not numerous or very important aside from the new plant of the Sharon Steel Company.

#### Tubes.

The National Tube Company control a very large percentage of the entire producing capacity of the country. The principal competitors are the Crane Company of Chicago, and the Reading Iron Company of Reading, neither of whom, however, control their own raw mate-

rials. Some efforts have been started by outside parties to enter this field, in one case backed by furnace and steel capacity.

#### The Wire Industry.

None of the constituent concerns outside of the American Steel & Wire Company has covered this line, although the Federal Steel Company do manufacture wire rods on a large scale, which have been sold, for some time, under a working arrangement, to the Federal Steel Company. Outside of the consolidation, conspicuous as a producer of specialties is the Roebling plant at Trenton. Wire rods and wire products are also made by the Ashland Steel Company, the Dillon-Griswold Company, the Grand Crossing Company, the Sharon Steel Company and the Alabama Steel & Wire Company. Rods are also made by the New York Steel & Wire Company, at Cortland, N. Y., and until the recent fire by the New Haven Wire Corporation. In many of the wire specialties there are a very large number of independent plants.

On the whole this may appear as a formidable array. Unfortunately it is not possible to give numerical expression to the relation between the works of the great consolidation and the outside mills. Even if it were, it would not accurately convey a judgment of it, because the capacity to produce and market cheaply must be the dominating factor, and it must be admitted that broadly speaking the great concerns of the Central West collected in this new aggregation possess an enormous advantage. It is true that it is carrying a good deal of dead wood in the shape of plants not quite up to date, but that is so, too, with very many of the independent mills.

It is useless, from the standpoint of those who are henceforth its competitors, to blink at the fact that the power of the great consolidation does not alone rest upon its mere weight of tonnage or upon its extensive control of raw material and of means of transportation; but that its strength is based upon the possession of the greatest number of all the best equipped plants in the country.

Still a good deal remains to be done to carry into effect the many improvements, largely started during the last year, by the individual consolidations. There must be much strengthening and modernizing of plants and of concentration of scattered equipment.

The course pursued by some of the consolidations lately of participating in and encouraging a fusion or a co-operation among leading consuming branches may soon follow the establishment of this huge organization. Some steps have been taken in this direction, for instance among the can manufacturing industry, the makers of corrugated sheets and of roofing.

#### The Position of the Middleman.

The probable course of the consolidation is pretty well foreshadowed by the steps taken by the individual consolidations and associations in recent years. In the rail trade the broker and the merchant have been practically eliminated for years. It is natural that he who formerly intervened to a considerable extent between the different interests now to be fused will be dispensed with. In the smaller lines, including bars, sheets, wire, &c., a certain tonnage will be distributed through merchants and jobbers upon lines very closely drawn. Some of the managers of interests in these branches insist that they will push the reforms which they have already begun, throwing down emphatically those who continue to resort to trumped up claims when the markets go against them. It is quite evident that the field of the middleman will be much narrower in any case, and will be swept away in others.

#### Steadier Markets.

The concentration of power in the hands of one large consolidation is expected to bring about a decided steadying of the markets. The factor of ignorance should be robbed of much of its power for mischief. The great consolidation, controlling its raw materials, must necessarily be largely relieved of the danger of fluctuations in their cost. The close touch with consumptive channels should make it possible to adjust with great nicety

the powers of production. As a competitor, so huge an organization could develop very dangerous strength by waging war in one territory and drawing the sinews therefrom from uncontested markets.

#### A Factor in the World's Trade.

When the fact is taken into consideration that a corporation like that now forming possesses a capacity for production very close to that of the entire steel trade of Great Britain or Germany, and producing at low cost, its influence upon the world's markets may be appreciated. It is difficult to escape the conclusion that the makers of Great Britain must draw nearer together and to some extent at least intimate the Germans, whose syndicates are in a far better condition to wage war and conduct peace negotiations. That the managers of the great consolidation will make strenuous and sustained efforts to conquer an increasing share of the world's trade is certain.

#### Public Opinion.

It will take clever management on the part of the consolidation to meet and break the force of aroused public opinion. Imagination is sure to be inflamed by the colossal undertaking now about to be consummated, and there are many who will be eager to fan the flames. It is difficult to conceive of the range of the powers of a concern which so largely controls the manufacture of steel, from the tiny tack to the huge armor plate, from the hairlike wire to the steel rail, from the thin sheet to the enormous bridge and the sky scraper.

It is stated that the new consolidation will command an army of men larger than that of three of the greatest trunk lines of the country. To handle such a body successfully alone requires the greatest executive ability, and it will require tact and judgment to carry out, without inflicting grievous injury not alone upon individuals but upon whole communities, such simple plans as the concentration of scattered works.

It is certain that the new consolidation will lend much support to the anti-trust agitation, and will be its shining mark. Keen eyes will watch every move, and unscrupulous demagogues and an unbridled yellow press will distort even the most trivial incident.

**St. Clair Steel Company.**—The St. Clair Steel Company of Pittsburgh who are an allied interest of the Crucible Steel Company of America, will break ground just as soon as weather permits for their large open hearth plant, at Blair, on the Monongahela division of the Pennsylvania Railroad. The initial plant will consist of 12 50-ton basic or acid open hearth steel furnaces, blooming mill, and perhaps some finishing mills. The contract for the blooming mill and engines has been given to Mackintosh, Hemphill & Co. of Pittsburgh, while the furnaces may be erected by the firm themselves. The St. Clair Steel Company will roll down billets, blooms and slabs in this mill to be used by constituent works of the Crucible Steel Company of America.

**The American Rolling Mill Company.**—The American Rolling Mill Company, Middletown, Ohio, have now entirely completed their plant. The factory department for the manufacture of corrugated iron, steel roofing sheets, eaves trough, conductor pipe, &c., has been in operation since January 1. The open hearth furnaces were first charged February 6 and are working very successfully. On the 9th inst. the company began rolling sheet bars and in another week expect to have their sheet mills in operation. The following are the officers: Geo. M. Verity, president and general manager; W. T. Simpson, vice-president; R. C. Phillips, secretary; Jas. B. Strawbridge, general superintendent.

C. F. Lum, W. E. Lum and George E. Lum of Birmingham, Ala., have incorporated the George E. Lum Machine & Supply Company with a capital of \$5000, for the purpose of dealing in supplies for machinery, &c.

The American Bridge Company announce their sales during the month of January as the largest of any month since the organization, aggregating over 60,000 tons.



## The Subsidy Bill.

WASHINGTON, D. C., February 12, 1901.—The shipping bill has clearly lost ground during the past week, but whether this is merely a temporary disadvantage that may be regarded in a few days cannot now be stated. The vicissitudes experienced by the measure since the beginning of the present session of Congress have been remarkable, and in view of the advanced stage of the session and the complete control of the legislative programme which the peculiar rules of the Senate give to the minority the most experienced observers have abandoned all attempts to predict the fate of this measure.

The most important setback received by the shipping bill during the past week was the complete failure of the plan evolved by the majority to force night sessions. These sessions were designed to be devoted entirely to the discussion of the shipping bill, and it was anticipated that the consideration of the measure would be materially expedited, while the regular six hours' sessions would be devoted exclusively to the appropriation bills and other important administration measures. As foreshadowed in these dispatches, the first difficulty encountered was in securing the attendance of a quorum, and while this was maintained during parts of two evenings it soon became apparent that it would be a physical impossibility to continue such a programme for any length of time. In addition, it was found impossible during the two night sessions held to confine the discussion to the shipping bill, which was only incidentally referred to. The character of the two sessions may be gathered from the language of Senator Tillman of South Carolina, who, in demanding an adjournment, declared that it was "time for the ringmaster of this circus to close the show."

But 15 legislative days now remain, and in view of the impossibility under the rules of securing a vote so long as any Senator desires to speak, the minority can easily prevent a ballot upon the shipping bill. The attitude of the opponents of the measure in the Senate was voiced by Senator Jones of Arkansas during the week when he demanded that night sessions be abandoned and that the day sessions be devoted to the passage of appropriation bills.

"Speaking for myself," he said, "and I believe speaking for those who sit on this side of the chamber, I will not, so help me high heaven, ever be a party, directly or indirectly, to this effort to throttle free speech. And I put you on notice now that if you propose to have these sessions you must furnish the quorum; you must have it here; you must keep it here in the Senate chamber every minute of the time. It will not do to have your Senators in the cloak room or in the committee rooms, or at their private houses. It will not do to have you come here and answer to your name now and then that you are here. You must have the quorum present, and have it all the time, as we do not propose to contribute in any way to bring about what we believe to be an outrageous, tyrannical effort to suppress free speech by brute force."

This statement has been universally taken to mean that it is the present intention of the minority not to allow a vote to be taken on the shipping bill at the present session, and it is believed that nothing short of a complete change of front on the part of the minority leaders can result in the passage of the bill. That this change will be brought about is predicted with much apparent confidence by the managers of the bill, but the methods that are relied upon are not suggested. In the meantime the deliberations of the Senate are confined to sessions lasting from 11 a.m. to 5 or 6 p.m., and at present are being devoted almost exclusively to the appropriation bills. Better progress has been made with these measures during the past week than heretofore. The Legislative, the Indian, the Pension and the Naval appropriation bills have been disposed of, but half a score still remain, including the River and Harbor bill, which now foots up the enormous total of \$79,000,000. These measures are usually before the Senate for two or three days, hence only by the exercise of the utmost energy can they be put through at the present session, even if the attention of the Senate is devoted continuously to them.

The principal features of the discussion of the ship-

ping bill during the past week have been speeches by Senators Morgan of Alabama and McLaurin of South Carolina, the latter attracting special attention because, although a member of the minority, Mr. McLaurin strongly urged the passage of the bill. Mr. Morgan's speech was devoted to a somewhat sarcastic account of the manner in which the original bill had been drafted by the Committee of Twenty-five, and of ex-Senator Edmunds' connection therewith as "employed counsel." Senator Morgan also assailed the bill on the alleged ground that it practically repealed provisions of the general statutes prohibiting Senators and Congressmen from interesting themselves in Government contracts.

"There are Senators on this floor," said Senator Morgan, "who are worth millions and millions and millions of dollars, and I am very glad they are, and I am glad they are here, and am very glad they are worth so much; but I will suppose that one of those Senators takes it into his head that he will go into the shipping business and he goes to the Secretary of the Treasury and he says to him, 'I want to make a contract to build 50 ships, and I can give you all the security that is necessary under one of the sections of this bill. You know me and I know you. We are members of the same political party. I am in the Senate, and I should like to get that job.' Is there anything in this bill to prevent it? No, sir. It is put right in his power by the repeal of this section, and if it interferes with, supersedes, or in any wise contradicts the provision of this bill that statute goes by the board and that relieves him. There is no restraint left upon him."

Senator Morgan also declared that the shipping bill violated a principle which had been observed in all the fiscal legislation of the United States for many years. He asserted that no greater safeguard existed than the law which provided that no officer of the Government could make a contract that would bind the United States beyond the current fiscal year. "But when," said he, "you get one of these contracts made and signed and executed according to the terms of this statute, and its execution is entered upon by the party contracting, that party has got it in his power to continue, it makes no difference what disaster it may bring upon the country. He keeps on piling up debt after debt for the Government of the United States and we have no resort except in repudiation or bankruptcy."

Senator McLaurin's speech attracted great attention not only because of the divergence of his views from those of his political associates, but also because it emphasizes the extent to which the great cotton industry of the South has been brought into sympathy with the proposed legislation. Senator McLaurin said in part:

"It is not my purpose to enter into a lengthy discussion of this measure, but I shall confine myself to a simple statement of the reasons which will influence me in my vote upon the bill.

"In May last there met at Charlotte, N. C., the most representative body of business men which has assembled in that section during the last 25 years. It was the annual meeting of the Cotton Spinners' Association of the South. It represented the entire cotton business from Virginia to Texas, and about 400 or 500 men, the foremost in the South, were there.

"No other industry is so thoroughly typical of the South as that of cotton. No other country in the world and no other section of any country has such a complete monopoly of so vast an industry as the South has in the production of raw cotton, and as it is destined to have in the near future in the manufactured product. In that favored section is produced three-fourths of the world's cotton supply, including the value of the seed, which nets to our people more than \$400,000,000, and before it reaches the consumer it amounts to more than \$2,000,000,000 in the finished product.

"Producing, we might also say, the world's supply of raw cotton, the South is also rapidly developing cotton manufacturing, so that in its own mills it may furnish employment for its hitherto idle hands, and thus create the enormous wealth which New England and Old England and the Continent have made in turning our cotton into the finished product. The men who gathered at Charlotte are the leaders in this great industry. They

are the men who are making the South. Where no grass grew they are making two blades to grow. Where a few years ago there were thousands of idle, unemployed people living in ignorance and in poverty, there are to-day tens of thousands of well fed, well clothed, thrifty, well paid operatives working in the mills built by these great captains of industry.

"At their meeting in Charlotte after two days of brilliant speeches there was not a dissenting voice in public or in private against the following resolution, a resolution having in view especially the bill under consideration, because it was mentioned in nearly every speech that was made. With a ringing cheer these 400 or 500 great captains of Southern industry, representing a business investment of more than \$150,000,000, unanimously resolved:

"That the Southern Cotton Spinners' Association recommend to Congress the enacting of legislation carrying such compensation as will stimulate the development of American shipping interests under the American flag to an extent necessary to handle American commerce on the high seas in time of peace, and which will provide at the same time such transports and auxiliary service as may be needed in time of war."

"I know a great many of these men. I might say I know a majority of them personally, and the others I know well by reputation. I know that they are patriots at heart. I know that they are as deeply interested in the welfare of the South and of this country as any man who stands upon this floor. I know that they are doing great work in bringing prosperity to the whole South by the creation of employment. I know that the development of a home market for cotton, in active competition with foreign producers, has, during the last two years, had a most marked effect in increasing the price of the staple to the farmer.

"I have here a number of letters which I will not consume time by reading but which I will print as a part of my remarks, from men all over the South (from my own State as well as elsewhere) upon this subject. Outside of the cotton mill interest I further believe that the convention in Charlotte represented the advanced thought of the business people of the South, and it was shown in the great industrial convention held a few weeks ago in New Orleans, La., and it was reached last week at a meeting in Brunswick, Ga., and its expression will be found in the letters which I shall publish as a part of my remarks."

The present plans of the managers of the shipping bill include rapid work upon the appropriation bills for several days, and when they are fairly out of danger to try another series of night sessions. In the meantime considerable missionary work is being done among the minority Senators, and the River and Harbor bill, in which the Southern States have important interests, is being held in the Commerce Committee.

W. L. C.

**Improvements at Homestead.**—Some extensive improvements are under way at the Homestead Steel Works of the Carnegie Steel Company, and more will be started in a short time that will greatly increase the capacity of the plant and give employment to many more men. Work has been started on four additional open hearth furnaces in No. 2 department at the Homestead Steel Works. The excavation is almost finished and the brick work is well under way. The new furnaces are being erected at the upper end of the mill, and will result in the extension of the present building over 200 feet. The new furnaces will have a capacity of 50 tons each. There are already 46 basic open hearth furnaces in operation at the Homestead Works, and with the four new ones now being built the works will be the greatest open hearth plant in the world, with a capacity of over one-third of all the open hearth steel turned out in the country. The new furnaces will be rushed to completion as fast as possible. The additional rolling mills erected at the Homestead plant during the past two years have overtaken the capacity of the roll shops, and a large annex is to be built at once. Many additional lathes will be put in. Another improvement

will be the enlargement of the pipe fitting shop. A new shop will be erected near the site of the present one. Ground has also been broken at Duquesne for the new merchant mill. The site of the mill is the Oliver Park property, where the company intended to erect the proposed tube mill. Several hundred men are at work on the excavating. Sidings are being put in from the Pittsburgh, Virginia and Charleston and Union railroads, and the parts of machinery for the mill are expected to arrive in a few days.

## The Cleveland Molders' Strike.

(By Telegraph.)

CLEVELAND, OHIO, February 12, 1900.—The report is current here that after a five days' conference the officers of the National Founders' Association and the Molders' Union are apparently as far apart as ever in the attempt to settle the Cleveland strike. The conference committees were unable to agree in regard to what shall be done with the 300 non-union molders now employed in the shops in Cleveland. The foundrymen insist that in justice to these men they must be retained, while the molders will not consent to this. The conferees consisted of President W. H. Hoyt, Nathaniel French, Antonio C. Pessano, John M. Tayler and W. H. Pfahler of the Administrative Council of the National Founders' Association, and President Martin Fox, Joseph Valentine, James E. Roach, M. P. Murphy and David Balck of the Iron Molders' Union of North America. Secretary John A. Penton of the National Founders' Association, when interviewed Tuesday evening, denied the report that negotiations for the settlement of the strike had been abandoned, and stated that they would be continued. He will be in a position to give out further information to-morrow.

**The Associated Expanded Metal Companies.**—The regular semiannual convention of the Associated Expanded Metal Companies of North America will be held in the Hotel Schenley, Pittsburgh, commencing Thursday, February 14. These meetings of the Associated Expanded Metal Companies are for the purpose of having an interchange of ideas and going over the different features of the business. The arrangements for entertaining the representatives of the company are in the hands of Samuel Garrison and Walter Chess of Pittsburgh. On Thursday evening a banquet will be held in the Hotel Schenley. On Friday the guests will visit the Carnegie Steel Company works at Homestead and Braddock. It is stated that the outlook for building operations for this year will be the largest in years, besides the quality and standard will be better. The number of structures to withstand the ravages of fire will be larger than during any preceding year. The companies that will be represented at the convention are as follows: Northwestern Expanded Metal Company, Chicago; Central Expanded Metal Company, Pittsburgh; Eastern Expanded Metal Company, Boston; New York Expanded Metal Company, New York; St. Louis Expanded Metal Fireproofing Company, St. Louis; Southern Expanded Metal Company, Washington, D. C.; Expanded Metal Fireproofing Company, Chicago; Merritt & Co., Philadelphia; Buffalo Expanded Metal Construction Company, Buffalo; Expanded Metal Fireproofing Company of Pittsburgh, Pittsburgh; Western Expanded Metal & Fireproofing Company, San Francisco, Cal.; Expanded Metal Fireproofing Company, Limited, Toronto, Canada; the Fireproof Home Company, New York.

The Board of Appeals of McKeesport Councils, at McKeesport, Pa., met last week and handed down a decision in the appeals taken by the National Tube Company and the American Sheet Steel Company for the W. Dewees Wood Works. The National Tube Company had been assessed \$1,300,000, which was reduced \$163,000, leaving the assessment \$50,000 higher than in 1900. The American Sheet Steel Company had been assessed \$234,000, which was reduced \$6000, making the assessment \$9500 higher than in 1900.



## The Subsidy Bill.

WASHINGTON, D. C., February 12, 1901.—The shipping bill has clearly lost ground during the past week, but whether this is merely a temporary disadvantage that may be regarded in a few days cannot now be stated. The vicissitudes experienced by the measure since the beginning of the present session of Congress have been remarkable, and in view of the advanced stage of the session and the complete control of the legislative programme which the peculiar rules of the Senate give to the minority the most experienced observers have abandoned all attempts to predict the fate of this measure.

The most important setback received by the shipping bill during the past week was the complete failure of the plan evolved by the majority to force night sessions. These sessions were designed to be devoted entirely to the discussion of the shipping bill, and it was anticipated that the consideration of the measure would be materially expedited, while the regular six hours' sessions would be devoted exclusively to the appropriation bills and other important administration measures. As foreshadowed in these dispatches, the first difficulty encountered was in securing the attendance of a quorum, and while this was maintained during parts of two evenings it soon became apparent that it would be a physical impossibility to continue such a programme for any length of time. In addition, it was found impossible during the two night sessions held to confine the discussion to the shipping bill, which was only incidentally referred to. The character of the two sessions may be gathered from the language of Senator Tillman of South Carolina, who, in demanding an adjournment, declared that it was "time for the ringmaster of this circus to close the show."

But 15 legislative days now remain, and in view of the impossibility under the rules of securing a vote so long as any Senator desires to speak, the minority can easily prevent a ballot upon the shipping bill. The attitude of the opponents of the measure in the Senate was voiced by Senator Jones of Arkansas during the week when he demanded that night sessions be abandoned and that the day sessions be devoted to the passage of appropriation bills.

"Speaking for myself," he said, "and I believe speaking for those who sit on this side of the chamber, I will not, so help me high heaven, ever be a party, directly or indirectly, to this effort to throttle free speech. And I put you on notice now that if you propose to have these sessions you must furnish the quorum; you must have it here; you must keep it here in the Senate chamber every minute of the time. It will not do to have your Senators in the cloak room or in the committee rooms, or at their private houses. It will not do to have you come here and answer to your name now and then that you are here. You must have the quorum present, and have it all the time, as we do not propose to contribute in any way to bring about what we believe to be an outrageous, tyrannical effort to suppress free speech by brute force."

This statement has been universally taken to mean that it is the present intention of the minority not to allow a vote to be taken on the shipping bill at the present session, and it is believed that nothing short of a complete change of front on the part of the minority leaders can result in the passage of the bill. That this change will be brought about is predicted with much apparent confidence by the managers of the bill, but the methods that are relied upon are not suggested. In the meantime the deliberations of the Senate are confined to sessions lasting from 11 a.m. to 5 or 6 p.m., and at present are being devoted almost exclusively to the appropriation bills. Better progress has been made with these measures during the past week than heretofore. The Legislative, the Indian, the Pension and the Naval appropriation bills have been disposed of, but half a score still remain, including the River and Harbor bill, which now foots up the enormous total of \$79,000,000. These measures are usually before the Senate for two or three days, hence only by the exercise of the utmost energy can they be put through at the present session, even if the attention of the Senate is devoted continuously to them.

The principal features of the discussion of the ship-

ping bill during the past week have been speeches by Senators Morgan of Alabama and McLaurin of South Carolina, the latter attracting special attention because, although a member of the minority, Mr. McLaurin strongly urged the passage of the bill. Mr. Morgan's speech was devoted to a somewhat sarcastic account of the manner in which the original bill had been drafted by the Committee of Twenty-five, and of ex-Senator Edmunds' connection therewith as "employed counsel." Senator Morgan also assailed the bill on the alleged ground that it practically repealed provisions of the general statutes prohibiting Senators and Congressmen from interesting themselves in Government contracts.

"There are Senators on this floor," said Senator Morgan, "who are worth millions and millions and millions of dollars, and I am very glad they are, and I am glad they are here, and am very glad they are worth so much; but I will suppose that one of those Senators takes it into his head that he will go into the shipping business and he goes to the Secretary of the Treasury and he says to him, 'I want to make a contract to build 50 ships, and I can give you all the security that is necessary under one of the sections of this bill. You know me and I know you. We are members of the same political party. I am in the Senate, and I should like to get that job.' Is there anything in this bill to prevent it? No, sir. It is put right in his power by the repeal of this section, and if it interferes with, supersedes, or in any wise contradicts the provision of this bill that statute goes by the board and that relieves him. There is no restraint left upon him."

Senator Morgan also declared that the shipping bill violated a principle which had been observed in all the fiscal legislation of the United States for many years. He asserted that no greater safeguard existed than the law which provided that no officer of the Government could make a contract that would bind the United States beyond the current fiscal year. "But when," said he, "you get one of these contracts made and signed and executed according to the terms of this statute, and its execution is entered upon by the party contracting, that party has got it in his power to continue, it makes no difference what disaster it may bring upon the country. He keeps on piling up debt after debt for the Government of the United States and we have no resort except in repudiation or bankruptcy."

Senator McLaurin's speech attracted great attention not only because of the divergence of his views from those of his political associates, but also because it emphasizes the extent to which the great cotton industry of the South has been brought into sympathy with the proposed legislation. Senator McLaurin said in part:

"It is not my purpose to enter into a lengthy discussion of this measure, but I shall confine myself to a simple statement of the reasons which will influence me in my vote upon the bill.

"In May last there met at Charlotte, N. C., the most representative body of business men which has assembled in that section during the last 25 years. It was the annual meeting of the Cotton Spinners' Association of the South. It represented the entire cotton business from Virginia to Texas, and about 400 or 500 men, the foremost in the South, were there.

"No other industry is so thoroughly typical of the South as that of cotton. No other country in the world and no other section of any country has such a complete monopoly of so vast an industry as the South has in the production of raw cotton, and as it is destined to have in the near future in the manufactured product. In that favored section is produced three-fourths of the world's cotton supply, including the value of the seed, which nets to our people more than \$400,000,000, and before it reaches the consumer it amounts to more than \$2,000,000,000 in the finished product.

"Producing, we might also say, the world's supply of raw cotton, the South is also rapidly developing cotton manufacturing, so that in its own mills it may furnish employment for its hitherto idle hands, and thus create the enormous wealth which New England and Old England and the Continent have made in turning our cotton into the finished product. The men who gathered at Charlotte are the leaders in this great industry. They

are the men who are making the South. Where no grass grew they are making two blades to grow. Where a few years ago there were thousands of idle, unemployed people living in ignorance and in poverty, there are to-day tens of thousands of well fed, well clothed, thrifty, well paid operatives working in the mills built by these great captains of industry.

"At their meeting in Charlotte after two days of brilliant speeches there was not a dissenting voice in public or in private against the following resolution, a resolution having in view especially the bill under consideration, because it was mentioned in nearly every speech that was made. With a ringing cheer these 400 or 500 great captains of Southern industry, representing a business investment of more than \$150,000,000, unanimously resolved:

"That the Southern Cotton Spinners' Association recommend to Congress the enacting of legislation carrying such compensation as will stimulate the development of American shipping interests under the American flag to an extent necessary to handle American commerce on the high seas in time of peace, and which will provide at the same time such transports and auxiliary service as may be needed in time of war."

"I know a great many of these men. I might say I know a majority of them personally, and the others I know well by reputation. I know that they are patriots at heart. I know that they are as deeply interested in the welfare of the South and of this country as any man who stands upon this floor. I know that they are doing great work in bringing prosperity to the whole South by the creation of employment. I know that the development of a home market for cotton, in active competition with foreign producers, has, during the last two years, had a most marked effect in increasing the price of the staple to the farmer.

"I have here a number of letters which I will not consume time by reading but which I will print as a part of my remarks, from men all over the South (from my own State as well as elsewhere) upon this subject. Outside of the cotton mill interest I further believe that the convention in Charlotte represented the advanced thought of the business people of the South, and it was shown in the great industrial convention held a few weeks ago in New Orleans, La., and it was reached last week at a meeting in Brunswick, Ga., and its expression will be found in the letters which I shall publish as a part of my remarks."

The present plans of the managers of the shipping bill include rapid work upon the appropriation bills for several days, and when they are fairly out of danger to try another series of night sessions. In the meantime considerable missionary work is being done among the minority Senators, and the River and Harbor bill, in which the Southern States have important interests, is being held in the Commerce Committee.

W. L. C.

**Improvements at Homestead.**—Some extensive improvements are under way at the Homestead Steel Works of the Carnegie Steel Company, and more will be started in a short time that will greatly increase the capacity of the plant and give employment to many more men. Work has been started on four additional open hearth furnaces in No. 2 department at the Homestead Steel Works. The excavation is almost finished and the brick work is well under way. The new furnaces are being erected at the upper end of the mill, and will result in the extension of the present building over 200 feet. The new furnaces will have a capacity of 50 tons each. There are already 46 basic open hearth furnaces in operation at the Homestead Works, and with the four new ones now being built the works will be the greatest open hearth plant in the world, with a capacity of over one-third of all the open hearth steel turned out in the country. The new furnaces will be rushed to completion as fast as possible. The additional rolling mills erected at the Homestead plant during the past two years have overtaxed the capacity of the roll shops, and a large annex is to be built at once. Many additional lathes will be put in. Another improvement

will be the enlargement of the pipe fitting shop. A new shop will be erected near the site of the present one. Ground has also been broken at Duquesne for the new merchant mill. The site of the mill is the Oliver Park property, where the company intended to erect the proposed tube mill. Several hundred men are at work on the excavating. Sidings are being put in from the Pittsburgh, Virginia and Charleston and Union railroads, and the parts of machinery for the mill are expected to arrive in a few days.

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## Pig Iron Production Heavily Increased.

### Stocks Decline Slightly.

There has been a heavy increase in the active furnace capacity during January, partly by the starting of new furnaces and by the blowing in of stacks in the Central West.

The weekly capacity of the furnaces in blast on February 1 compares as follows with that of the preceding periods:

	Furnaces in blast.	Capacity per week. Gross tons.
February 1, 1901.....	271	278,258
January 1.....	233	250,351
December 1, 1900.....	211	228,846
November 1.....	201	215,304
October 1.....	213	223,169
September 1.....	228	231,778
August 1.....	240	244,426
July 1.....	284	283,413
June 1.....	233	236,376
May 1.....	232	233,850
April 1.....	291	280,482
March 1.....	233	232,643
February 1.....	236	238,014
January 1.....	230	234,186
December 1, 1899.....	233	236,959
November 1.....	277	288,522
October 1.....	265	278,650
September 1.....	257	267,335
August 1.....	244	267,672
July 1.....	297	293,263
June 1.....	230	231,062
May 1.....	217	210,085
April 1.....	205	210,746
March 1.....	192	228,195
February 1.....	195	237,639
January 1.....	200	243,516
December 1, 1898.....	195	235,528
November 1.....	196	238,935
October 1.....	192	215,635

The condition of the coke and anthracite furnaces at the beginning of the month was as follows:

Coke and Anthracite Furnaces in Blast February 1, 1901.

Location of furnaces.	Total No. of stacks.	No. in blast.	Capacity per week.	No. out of blast.	Capacity per week.
New York.....	14	2	3,144	12	8,857
New Jersey.....	8	3	1,935	5	2,695
Spiegel.....	3	3	595	0	0
Pennsylvania:					
Lehigh Valley.....	29	16	9,870	13	5,064
Spiegel.....	1	1	182	0	0
Schuylkill Valley.....	14	9	8,067	5	2,115
Upper Susquehanna.....	4	3	3,500	1	336
Lower Susquehanna.....	9	4	4,003	5	1,986
Spiegel.....	1	1	490	0	0
Lebanon Valley.....	12	10	10,299	2	1,480
Pittsburgh District.....	30	27	63,002	3	4,794
Spiegel.....	1	1	1,048	0	0
Shenango Valley.....	15	9	13,548	6	5,908
Western Pennsylvania.....	23	18	15,951	10	5,811
Spiegel.....	1	1	890	0	0
Maryland.....	5	3	5,185	2	1,375
Wheeling District.....	8	6	8,567	2	3,220
Ohio:					
Mahoning Valley.....	13	12	24,219	1	1,617
Central and Northern.....	14	10	16,793	4	8,998
Hocking Valley.....	2	2	835	0	0
Hanging Rock.....	14	8	4,557	6	1,607
Illinois.....	15	14	25,710	1	2,352
Spiegel.....	1	1	860	0	0
Minnesota.....	1	0	0	1	763
Wisconsin.....	5	3	8,573	2	1,176
Missouri.....	1	0	0	1	370
Colorado.....	2	2	3,309	0	0
The South:					
Virginia.....	21	15	9,650	6	3,160
Kentucky.....	5	3	1,025	2	1,370
Alabama.....	34	20	22,680	14	6,734
Tennessee.....	13	8	5,276	5	2,827
Georgia.....	1	0	0	1	450
North Carolina.....	2	0	0	2	437
Totals.....	322	210	269,923	112	77,597

In comparison with previous months the record of the coke and anthracite furnaces stands as follows in gross tons:

	Number in blast.	Capacity per week.
February 1, 1901.....	210	278,258
January 1.....	201	243,254
December 1, 1900.....	179	222,067
November 1.....	171	207,381
October 1.....	182	214,921
September 1.....	197	223,551
August 1.....	209	236,131
July 1.....	252	274,921
June 1.....	206	238,771
May 1.....	207	236,956
April 1.....	262	281,644
March 1.....	264	285,596

February 1.....	264	290,010
January 1.....	250	286,729
December 1, 1899.....	253	289,448
November 1.....	248	281,409
October 1.....	241	272,436
September 1.....	233	261,670
August 1.....	222	261,483
July 1.....	217	257,345
June 1.....	204	249,119
May 1.....	197	245,249
April 1.....	188	240,969
March 1.....	175	223,955
February 1.....	178	232,672
January 1, 1899.....	180	237,480
December 1, 1898.....	177	229,510
November 1.....	176	222,988
October 1.....	172	209,903

During January production was resumed by Stanhope in New Jersey, Eliza at Pittsburgh, Sharon in the Shenango Valley, Punxy and Juniata in Western Pennsylvania, Paxton in the lower Shenango Valley, and Sheridan in the Lebanon Valley, Steubenville in the Wheeling district, the new furnace of the American Steel & Wire Company in the Cleveland district, Etna in the Hanging Rock, Anna, Mary and Niles in the Mahoning Valley, Calumet and Union in the Chicago district and one Ashland in Kentucky. There were blown out Zanesville, Low Moor and one Pioneer in Birmingham.

The condition of the charcoal furnaces at the beginning of the month was as follows:

Charcoal Furnaces in Blast February 1, 1901.

Location of furnaces.	Total No. of stacks.	No. in blast.	Capacity per week.	No. out of blast.	Capacity per week.
New England.....	7	3	286	4	360
New York.....	2	2	144	0	0
Pennsylvania.....	13	2	72	11	500
Maryland.....	4	0	0	4	442
Virginia.....	3	1	60	2	120
Ohio.....	6	4	220	2	144
Kentucky.....	3	0	0	3	300
Tennessee.....	6	4	1,334	2	330
Georgia.....	4	1	383	3	549
Alabama.....	4	3	936	1	325
Michigan, Missouri and Wisconsin.....	13	10	4,735	3	1,225
Texas.....	4	1	168	3	775
Totals.....	69	31	8,235	38	4,960

As compared with previous months the record of active charcoal furnaces stands as follows:

	Furnaces in blast.	Capacity per week.
February 1, 1901.....	31	8,235
January 1.....	32	7,097
December 1, 1900.....	32	6,779
November 1.....	30	7,923
October 1.....	31	8,248
September 1.....	31	8,227
August 1.....	31	8,295
July 1.....	32	8,492
June 1.....	27	7,605
May 1.....	25	6,894
April 1.....	29	7,898
March 1.....	29	7,047
February 1.....	32	8,004
January 1.....	30	7,457
December 1, 1899.....	30	7,511
November 1.....	29	6,222
October 1.....	25	5,065
September 1.....	24	6,189
August 1.....	22	6,018
July 1.....	20	4,943
June 1.....	20	4,846
May 1.....	17	4,777
April 1.....	16	4,330
March 1.....	17	4,967
February 1.....	30	6,036
January 1.....	18	6,018
December 1, 1898.....	20	5,947
November 1.....	20	5,732
October 1.....	20	5,732

### Furnace Stocks.

The position of furnace stocks, sold and unsold, as reported to us, was as below on February 1, the same furnaces being represented as in former months. This does not include the holdings of the steel works producing their own iron.

Stocks.	Sept. 1.	Oct. 1.	Nov. 1.	Dec. 1.	Jan. 1.	Feb. 1.
Anthracite and Coke.....	575,713	608,587	573,952	493,702	469,450	483,528
Charcoal.....	49,444	61,944	67,514	62,994	69,213	73,236
Totals.....	625,157	670,531	641,466	556,696	538,663	556,764

### Warrant Stocks.

The American Pig Iron Storage Warrant Company report the following stocks:

Stocks.	Sept. 1.	Oct. 1.	Nov. 1.	Dec. 1.	Jan. 1.	Feb. 1.
Coke and Anthracite.....	20,000	20,300	18,500	17,400	15,000	13,000
Charcoal.....	1,800	1,500	1,500	1,400	1,400	1,400
Totals.....	21,800	21,800	20,000	18,800	16,400	14,400

## MANUFACTURING.

### Iron and Steel.

Stack No. 2 of the Lorain Steel Company, Lorain, Ohio, has resumed blast again after being idle six or seven months. The two blast furnaces and Bessemer plant of the Lorain Steel Company are in operation.

The report that the American Sheet Steel Company, New York City, would build two more sheet mills at Struthers, Ohio, is untrue.

The Bessemer plant of the Republic Iron & Steel Company at Youngstown, Ohio, started up on Wednesday, February 6, after a delay of seven days, owing to the breaking of the main shaft in the blooming mill engine.

The Vulcanus Forging Company of Cleveland, Ohio, are running their plant to utmost capacity. This concern will build a new works in the coming spring. Recent orders included a contract for 27,000 lag screws and one for 15,000 lag screws, all for Government work. The company have just shipped a carload of  $\frac{3}{4}$ -inch rivets to Chicago, a carload of air brake pins, and 122 tons of truss and bridge rods. A considerable order for forgings for a Northern Ohio concern has also been booked. Among recent machinery added are 4-inch bolt cutters manufactured by the Reliance Machine & Tool Company of Cleveland, Ohio.

The Republic Iron & Steel Company have resumed operations in the puddling department at the Terre Haute, Ind., mill.

Henry Clay Furnace No. 1, at Reading, Pa., of the Empire Steel & Iron Company is being relined and otherwise extensively repaired. It will be put in blast about March 1.

The East Tennessee Iron & Coal Company of Knoxville, Tenn., will build a railroad from near Buckeye to a point near La Follette, Tenn., where they own over 50,000 acres of coal and timber land. Coal has been shipped from this property since 1888, and the railroad is to be constructed for the purpose of further development.

The sheet mills in the plant of the Chester Rolling Mill Company, at Chester, W. Va., which was taken over by the American Sheet Steel Company, are to be removed to the Wellsville Works, at Wellsville, Ohio. The Chester Works have never been operated.

Hannah Furnace of the Republic Iron & Steel Company, at Youngstown, Ohio, was started on Saturday, February 9. Haselton stack, also at Youngstown, now running on foundry iron, will be put on mill iron to be used in the Youngstown mills, and the Hall stack at Sharon will be put on foundry.

The Ohio Works of the National Steel Company, at Youngstown, are now running on rails and turning out from 1600 to 1700 tons per day. Two new soaking pits have been lately added to the rail finishing department, and two new straighteners and four drill presses are being installed.

The puddling and muck bar mill of the Stewart Iron Company, Limited, at Sharon, Pa., will be started up this week. The plant has been idle for some time.

The Norway Iron & Steel Company, York, Pa., whose new malleable iron and steel casting plant is almost complete, are now making deliveries on malleable castings. Owing to various delays the steel casting department is not yet in operation.

Steubenville Furnace of the National Tube Company, at Steubenville, Ohio, will be blown in this month.

The National Steel Company have had under erection for some time two new blast furnaces at Mingo Junction, Ohio. One furnace may be ready to blow in March, and the other in June. Each will have a daily capacity of about 600 tons. The National Steel Company have dismantled one of their old Mingo furnaces.

Corrigan, McKinney & Co. of Cleveland expect to blow in Charlotte Furnace, at Scottsdale, this month.

The Niles Iron & Sheet Company, at Niles, Ohio, have increased their capital stock to \$200,000. Work on the building of the new sheet mill of this concern is being pushed, and the company expect to be in the market with their sheets inside of 60 days.

The American Tubular Wheel Company, incorporated in Delaware, with a capital of \$200,000, will manufacture in Pittsburgh seamless tubing for automobile wheels. The wheels will be made in the factory of the United States Motor Company, on Penn Avenue, Pittsburgh. Emmet McConville is the inventor of the wheel.

It is not believed the projected tube plant of the Carnegie Steel Company at Conneaut will be built, yet operations at the site of the proposed new works are proceeding. The force of engineers which was sent to Conneaut soon after the first announcement of the project is still at work. Several options on land have been exercised, and the Carnegie Company have acquired a very large acreage at that place. It is possible, however, the land may be used for other purposes.

The Columbus Iron & Steel Company, Columbus, Ohio, are discussing the advisability of installing two 300 horse-power boilers by March 1. In case this is done, with the opening of the new furnace on that date and with the six boilers of 1800

horse-power now in use the working force will be increased by at least 75 men.

New Castle Furnace No. 4, which the National Steel Company are building at New Castle, Pa., will be completed about July 1. It will have a daily capacity of 600 tons.

The employees of the Titusville Iron Company, at Titusville, Pa., have been notified of a voluntary advance of 5 per cent. in wages, effective at once.

The Canton Steel Company, Canton, Ohio, will add a 10-inch mill to their plant.

The Sharon Steel Company, Sharon, Pa., expect to have their new blast furnace completed ready for blast about April 1.

The new blast furnace of the American Steel & Wire Company, on Neville Island, Pittsburgh, is expected to be ready for blast about May 1.

The Union Steel Company of Pittsburgh have not yet broken ground for their projected new blast furnace at Donora, Pa., where the rod and wire mills of the company are being erected.

The wire mill at New Haven, Conn., which was purchased from the New Haven Wire Company by the National Wire Corporation two years ago, was last week completely destroyed by fire, entailing a loss of \$400,000, fully covered by insurance.

The Cuyahoga Iron & Steel Company were organized at Akron, Ohio, on Monday, Feb. 11, to build a rod mill beside the plant of the E. A. Henry Wire Company, at Cuyahoga Falls. The new concern have a capital stock of \$100,000, and the output of the rod mill will be used by the E. A. Henry Wire Company. The officials are S. H. Miller, president; H. B. A. Kaiser of Pittsburgh, vice-president, and E. A. Henry of Cuyahoga Falls, treasurer.

The Illinois Steel Company will start up their No. 3 rod mill at Joliet, Ill., in a few days. They will then have their entire Joliet plant in operation. This mill will turn out spike bar and other merchant product.

E. H. Welsh of Cumberland, Md., has been appointed receiver of the Potomac Steel Company of Cumberland, of which F. J. McFerran of Pittsburgh is president. The company in their petition declared that they had assets sufficient to pay their liabilities dollar for dollar. The receiver was appointed for the purpose of organizing a new company, of which E. P. Baumgarten, W. A. Haffon, Geo. Tallwall and Jos. Schonthal, all of Pittsburgh, will be members. It is said the plant will be started up in a short time.

The Bloom Furnace, at Bloom Switch, Ohio, has been banked until May 1.

The Hinkle Furnace of the Ashland Iron & Steel Company was blown in January 31.

### Machinery.

George A. Reed & Son, Gloucester, Mass., iron and brass founders, have torn down their old building and have just completed a new foundry, 48 x 73 feet. A 50-ton crane and a new cupola have been installed.

The Landis Tool Company, Waynesboro, Pa., have recently erected a new foundry, the building for which, with an annex, is 80 x 84 feet. The annex is devoted to core making and castings cleaning, with washroom and sanitary closets for the employees. The building is heated with the Buffalo blower system. The old foundry has been remodeled and is now used for pattern making and storage. Recent orders filled by the company within a few weeks embrace four of the larger sizes of grinding machines to England and three to Germany. Of home orders is one machine to the Brown Hoisting & Conveying Company, Cleveland, Ohio; one to the Bagley & Lowell Company, Watertown, N. Y.; one to the Singer Mfg. Company, Elizabethport, N. J.; one to the W. H. Davenport Iron Company, Norwich, Conn., and one to the American Watch Tool Company, Waltham, Mass.

Geo. S. Comstock, Mechanicsburg, Pa., is very busy on coal washing machinery. This concern has recently shipped several cars of this machinery to Nova Scotia concerns and has in hand now large orders from the Pittsburgh district. Mr. Comstock has also more orders than usual at this time of year for his patented saw mills, and his works have been and are running full, with very bright prospects.

The American Machine & Foundry Company, Hanover, Pa., have recently completed an addition to their machine shop, have installed a new boiler and engine, and are now erecting a heating system for the whole plant, including the foundry, of the Buffalo Blower Company type. They have also just put in a foundry cupola hoist and a foundry crane, manufactured by Craig Ridgway & Son, Coatesville, Pa. They have gradually made additions to their help and now have 260 hands regularly employed. The works are running full time and three nights of the week until 10 o'clock.

Jay H. Newbury, Goshen, N. Y., manufacturer of iron pipe fittings, gray iron castings, &c., is building a 70-foot addition to the foundry. A quantity of new machinery has just been installed, and even with this increased capacity Mr. Newbury informs us that he is compelled to refuse orders.

The Campbell & Clute Machine Company, Cohoes, N. Y., manufacturers of improved knitting machinery, have incorpo-



rated and succeeded to the business formerly conducted under the firm name of Campbell & Clute. The company have just purchased property to the extent of \$35,000.

The Excelsior Foundry Company, Bay City, Mich., have received a contract for 700 columns, to be used in building the new sugar factories at Saginaw and Lansing. The castings will weigh about 800 tons, and will keep the plant running to its full capacity for months to come.

The Grand Rapids Malleable Company, Grand Rapids, Mich., manufacturers of iron castings, are enlarging their plant. The molding capacity will be increased one-third and the other departments correspondingly. The company advise us that they have in hand more business than they are able to execute at present, and are forced to increase their capacity.

The B. F. Sturtevant Company, Clinton and Harrison streets, Chicago, suffered considerable damage from a fire which partly destroyed their building on the 7th inst. They had a large stock of machinery on hand which was not reached by the flames. The greatest damage was done by water. The loss was fully covered by insurance. While some inconvenience has been caused, the company will not be obliged to remove their offices from the building. They are now doing a large business. Among contracts recently taken are the following: For ventilating and heating two public schools at El Paso, Texas; for ventilating the round house of the Illinois Central Railroad at Waterloo, Iowa; for ventilating the building of the Boston & Montana Consolidated Copper & Silver Mining Company at Great Falls, Mont., and for ventilating the plant of the Kelly Axe Mfg. Company, Alexandria, Ind.

The Marinette Iron Works Mfg. Company, Marinette, Wis., shipped two 120 horse-power engines last week. One of these is a direct connected electric lighting engine that will be used to furnish light for a large office building in Pittsburgh. The other will go to Buffalo and will help furnish motive power for the exposition. Three other engines also went to Pittsburgh, which were respectively 100, 50 and 40 horse-power. A 30 horse-power was also sent to Boston and one 30 and an 8 horse-power engine to Detroit. A 12 horse-power went to Lyndon, Ky.

The McKenzie Furnace Company, makers of the McKenzie stoker furnaces and the McKenzie grates and ventilators, 325 Western Bank Note Building, Chicago, will erect a new building in the near future on Indiana street, near Kingsbury. The structure will be utilized for a factory and offices, and will include a foundry, pattern room and warehouse. The building is to be 50 feet wide, 65 feet long, two stories high and of brick and steel construction. The plant will be equipped with the most modern appliances and will be in operation by May 1.

The Butler Street Foundry & Iron Company, Chicago, have been awarded the contract for furnishing the architectural iron work for the factory being erected for the Chicago Portrait Company, Chicago.

The Featherstone Foundry & Machine Company, Chicago, have installed a new 18-inch cupola and other machinery, and have increased their capacity by 20 tons per day. The company have received large contracts for castings and an order for a 100-ton ice machine.

The Murphy Stoker Furnace Company, Bedford Building, Chicago, have closed a contract with the Otis Steel Company, Cleveland, for 14 stoker furnaces, with an aggregate horse-power of 2800.

Frank Lynch, Fargo, N. D., dealer in machinery and supplies, is erecting a building 50 x 140 feet, three stories and basement, which is to be completed by April 1.

The Winslow Elevator & Machine Company, Chicago, are equipping their machine shops with new tools, including lathes, boring mills, shapers and special machinery. The new business of the company is growing rapidly, and they have numerous orders and contracts for elevators, bridges and machinery.

The Hawley Down Draft Furnace Company, Chicago, have sold six furnaces, with an aggregate horse-power of 1500, to the Flint-Eddy American Trading Company, New York. These furnaces are to go to Japan, where 30 others made by the same company have recently been shipped. The company report that prospects for the Japanese trade are very good, and, in fact, that their general business will be especially heavy this year.

C. F. Gronkle of Merrill, Wis., has selected a site for the location of a foundry and machine shop to be built at Everett, Wash.

The Oil Well Supply Company of Pittsburgh contemplate the erection of a machine shop at Florence, Col., where the firm already have a branch store.

The Fosdick & Holloway Machine Tool Company, Cincinnati, Ohio, manufacturers of radial and upright drills, have increased their capital stock for the purpose of enlarging their business. A full line of upright drills, from 20 to 42 inch swing, will be added to their product.

The Gemmer Engine & Mfg. Company, Marion, Ind., have organized for the purpose of manufacturing gas and gasoline engines and launches. They have taken over the building formerly occupied by the Marion Cycle Company and part of their machinery, and are adding tools, &c., of the latest design.

Notice of an increase in their capital stock from \$30,000 to

\$45,000 was filed yesterday by the Magnetite Foundry Company, St. Louis, Mo. The firm have assets of \$70,517.89 and liabilities of \$35,022.15. The increase is half paid.

McFarland Bros. have purchased a site in Jonesboro, N. C., on which they will erect a foundry and machine shop to cost about \$10,000.

The Wheeling Mold & Foundry Company, Wheeling, W. Va., have selected a site for their new plant containing about 3½ acres on the Terminal Belt Line in Wheeling, which will give this concern connections with all the railroads entering Wheeling proper. The firm are now asking bids on their new buildings and are pushing things as rapidly as possible, and expect to be in the market with their product, sand and chilled rolls and heavy housings, this spring. The annual meeting of the stockholders of the Wheeling Mold & Foundry Company was held last week and the Board of Directors, consisting of A. G. Hubbard, C. E. Blue, W. B. Jones, W. Z. Hoge and L. V. Blue, was re-elected. The officials of the company are C. E. Blue, president, L. V. Blue, vice-president, and A. G. Hubbard, secretary.

Norrish, Burnham & Co., Glen Rock, Pa., have within a short time enlarged their machine shop and erected a new power house, made necessary by their growing manufacture of the Norrish roller mills, the Burnham turbine water wheel and transmitting machinery.

The Bickford Machine Tool Company, Cincinnati, Ohio, are running their plant on full time, and state that sufficient orders have been booked to keep them busy for the next 60 days, while inquiries continue to be received in very gratifying numbers.

The concern heretofore known as the Columbus Malleable & Grey Iron Company of Columbus, Ohio, have been reorganized, changing its name to the Columbus Malleable Iron Company, with an increase in the capital stock from \$25,000 to \$50,000.

The wages of a number of machinists employed by the Firth-Sterling Steel Company, at Demmler, Pa., have been reduced from \$4 to \$3.25 a day, taking effect Monday, February 11. The company manufacture projectiles for the Government.

The Detrick & Harvey Machine Company, Baltimore, Md., continue exceptionally busy on their lines of open slide planers and horizontal drills. Orders of late have been numerous, one for a large open slide planer for export to France was recently booked, as well as several for the United States Government navy yards and one for the Union Iron Works, San Francisco, Cal., this being the tenth D. & H. planer that has been ordered by them. An order was also received for a 78 x 96 inch open slide planer from the Cleveland Punch & Shear Company, Cleveland, Ohio. The Detrick & Harvey Machine Company are now contemplating the installation of a large electric power plant sufficient to drive their entire shops.

The Union Foundry & Machine Company of Catsauqua, Pa., have lately increased their capital stock to \$100,000. They have purchased a new plot of ground near their present location and are about to commence the erection of a new plant, having outgrown their present site. The contract for a new foundry has already been given out, which will probably be the extent of the building operations for this season.

The Toledo Machine & Tool Company of Toledo, Ohio, have lately increased the capacity of their plant by putting in the following tools: A No. 5 Becker milling machine; a 68-inch radial drill; a 60-inch vertical boring and turning mill; a 54-inch Gray planer, and four Lodge & Shipley lathes. The company report a rapidly increasing demand for punch presses and dies. Among recent shipments made may be noted a carload of machinery to a stove concern at Pittsburgh; three carloads of machinery to a firm in Southern Indiana, and three large punch presses, each, to Cleveland and Chicago.

The Otto Gas Engine Company, Philadelphia, Pa., are erecting a two-story brick building and making a two-story addition to another building at their plant at Thirty-third and Walnut streets.

#### Hardware.

The American Tinware Mfg. Company recently equipped a factory at 79 to 83 South Jefferson street, Chicago, for the manufacture of all kinds of tinware, stamped tin and metal goods. They have installed the latest and most improved machinery, and all work is done under the supervision of experts in this line.

The Continental Chain Company, 935 Monadnock Building, Chicago, are getting their new plant at East Chicago in good working shape and will soon be operating it to full capacity. They find the demand for chain very good, having no difficulty in securing orders to keep the works actively employed. The Chicago chain trade in January was the largest ever known in that month, and February is keeping up the record made.

The Illinois Screw Company of Chicago, Ill., have just finished a 75 x 40 addition to their 256 x 50 factory building at Chicago Heights, Ill. Under the whole of this addition is a fine especially prepared basement into which they are putting a new 150 horse-power Corliss engine, boilers, &c. The need of this extra building has been felt with increasing pressure for some time, owing to the growing business and improved and enlarged producing facilities.

George William Hoffman, 295 East Washington street, Indianapolis, Ind., manufacturer of United States Infallible metal

polish paste and other specialties, advises us that business is very satisfactory. A number of large orders have lately been received, while "repeat" orders are also coming in freely.

The D. Wilcox Mfg. Company, Mechanicsburg, Pa., report such a demand for their specialties that they have decided to enlarge their plant during the ensuing summer.

#### Miscellaneous.

The Grand Detour Wagon Company have been incorporated at Dixon, Ill., to take over the equipment and stock of the Lafayette Wagon Company of Lafayette, Ind. The new company will be managed in close connection with the Grand Detour Plow Company, but the executive officers will be C. H. Baldwin, president, and John C. Frey, secretary and treasurer, both of whom were active in the management of the old Lafayette Wagon Company. The new company will occupy a modern plant of brick construction over 500 feet long by 40, 60 and 80 feet wide, part one and part two stories, with necessary outbuildings, switch track, with 5 acres of ground, located about five blocks west of the plow factory, affording ample convenience for loading plows and wagons together. It is their expectation to make first-class farm wagons of various sizes and styles, trucks, one-horse wagons, and possibly dairy or milk wagons later on.

Fire broke out on the 1st inst. in the building at Fulton and Jefferson streets, Chicago, occupied by the Gilchrist Company, manufacturers of brass and copper novelties; Torris, Wold & Co., machinists; George B. Gilbert, steam and pipe fittings, and the Carl Anderson Company, machinists and makers of the Gas and gasoline engine. The greatest damage was done by water.

The H. A. Streeter Globe Iron Works, Chicago, are working their plant to its fullest capacity, trying to fill the orders for their new Streeter clip for fastening structural work without rivets. The orders are mainly from the New York and Pittsburgh districts.

Knisely Brothers, metal roofers and architectural iron workers, 99 to 101 Bunker street, Chicago, have just completed the roofing and skylight work on the new addition to the power plant of the Deering Harvester Company, Chicago.

The owners of the Acme Radiator Works, at Unlontown, Pa., have sold the entire holdings of stock to the Kellogg-Mackey, Cameron Company, Chicago, who will operate the plant under its former name and management.

Theo. F. Beutel Company of Pittsburgh have been incorporated, with a capital of \$25,000, for the manufacture of bicycles and automobiles.

The Babcock Mfg. Company, Leonardsville, N. Y., have incorporated and succeeded to the business of H. D. Babcock and the Otsego Furnace Company. The plants formerly operated by the two latter concerns have been taken over and are now being occupied by the new company, who will continue the manufacture of agricultural implements and the Otsego warm air furnaces on an enlarged scale. At present their plant is being operated on double time.

C. C. Hanley & Co., Quincy Point, Mass., boat builders, have completed a marine railway of 1000 tons capacity, which they expect to have in working order by the middle of the present month.

The Expanded Metal Fire Proofing Company of Pittsburgh have been given the contract for fire proofing the Kaufmann Building in connection with the American Bridge Company, who will do the structural steel work. This is quite a large contract for fire proofing, and the Expanded Metal Fire Proofing Company will use what they call their Golding system, which enables them to extend floors over 16-foot spans, thus saving a great deal of iron in the building, besides carrying the heavy loads that are necessary in a warehouse. The firm were awarded this contract as the lowest bidder, all kinds of construction being considered.

The Spokane Galvanized Wire Pipe Company, Spokane, Wash., are erecting a new plant at Division street and Boone avenue, which will be completed early in March. The main building will be 40 x 60 feet, of frame construction, and the dry kiln 14 x 32 feet, also frame. New machinery of latest design will be installed and the works brought up to date in every respect.

The National Lap Link Company, 5 Madison street, Memphis, Tenn., have incorporated and succeeded to the business and plant, at Belleville, Ill., formerly owned and operated by W. K. Poston under the style of the National Lap Link Company. The new company propose to enlarge the scope of their business, which is the manufacture of plow goods. The incorporators are W. K. Poston, Thos. Wellford, Jas. Applewhite, F. P. Poston and J. Thos. Wellford, Jr.

The Jesse Stubbs Improved Wheel Scraper Company, with general offices at Omaha, Neb., have incorporated with a capital stock of \$50,000. The company have equipped a plant at Mt. Pleasant, Ia., and are now manufacturing wheel and drag scrapers under patents recently secured by Jesse Stubbs. The directors are E. C. Pierce, M. C. Peters, J. A. Kuhn, F. K. Higble and Jesse Stubbs. E. C. Pierce is president and treasurer, F. K. Higble vice-president, and M. C. Peters secretary.

The Pittsburgh Boiler Scale Resolvent Company, Park Building, Pittsburgh, Pa., have shipped to the United States Ice Ma-

chine, Iloilo, Philippine Islands, a quantity of their boiler scale resolvent for use in the Government boilers at that place.

The plant of the Damascus Bronze Company, on South avenue, Allegheny, Pa., of which Geo. A. McLean was former president, is now owned by Wm. B. Klee, he having purchased the entire stock of the company and is now president and treasurer of the concern. J. F. Brown, vice-president and manager, and Edwin B. Ross, secretary, assume the same positions under the new management, which will continue the business at the present location, under the name of Damascus Bronze Company. The business of this concern was founded in Pittsburgh more than 20 years ago, and the concern were incorporated in 1890.

The Eaton-Prince Elevator Company, Chicago, have just installed a large elevator for the Advance Thresher Co., Minneapolis, Minn. The bed of the elevator is 11 x 28 feet, and it has a capacity of 20,000 pounds. The regular speed is 16 feet per minute, but there is a device which enables it to carry 14,000 pounds at the rate of 32 feet per minute. The elevator is used to carry traction engines for threshing machines.

The Youngstown branch of the American Bridge Company, of Youngstown, Ohio, are turning out some structural work for hoisting and conveying machinery for shipment to Malmoe, Sweden. The Brown Hoisting & Conveying Machine Company of Cleveland have the contract for the conveying machinery.

Breadling, Wick, Gray & Gray of Carnegie, Pa., have bought the Princess Plow Company's plant at Canton, Ohio.

The Gillette-Herzog Mfg. Company of the American Bridge Company will furnish the steel work for the large steel building to be shipped to the Montezuma Copper Company, at Nacozarri, Mexico.

The Columbia Bridge Company of Pittsburgh, whose works are at Edenburg, Pa., will probably move their plant from the latter place to a site somewhere in the Pittsburgh district. The concern desire better railroad facilities and river frontage. It is possible they will locate the proposed new works at McKee's Rocks, near the plant of the Pressed Steel Car Company.

W. R. Brixey, 203 Broadway, New York City, manufacturer of Kerite insulated wires and cables, has been awarded by the Chief Signal Officer of the United States Army, under proposals for the cable opened Jan. 26, an order for 600 miles deep-sea type telegraph cable. The conductor will be composed of seven No. 21 B. & S. copper wires, weighing 90 pounds to the mile, and insulated with Kerite to an outside diameter of 9-32 inch; this core will be properly covered with jute to receive the armor wires, which will be No. 10 B. & S. for type "A," and No. 11 B. & S. for type "B." The copper required for the entire order will be 54,000 pounds; rubber, 45,000 pounds; jute, 250,000 pounds, and armor wire, 1,600,000 pounds. The cable will be manufactured at the rate of five miles per day and shipped in lots of 50 miles from the port of New York either on United States transport or merchant vessels to the Philippine Islands, where it will be used in connection with land lines for military purposes.

The Rumsey Pump & Machine Company, whose factories are situated at Seneca Falls, N. Y., and whose head office is at 35 Dey street, New York City, have taken the agency for the sale of the Denney improved rider and the Ericsson hot air pumping engines, which are manufactured by the American Machine Company. They will carry these in stock, and will make a prompt delivery of 6 and 8 inch rider hot air pumping engines and the 8-inch Ericsson hot air pumping engines.

The Standard Water Meter Company, successors to the Tuerk Hydraulic Power Company, manufacturers of water meters and motors, are now situated at 22 to 26 Reade street, New York City. Their former place of business was 23 Vandewater street, and it is at the latter address that the factory is yet situated. The Standard disk meter which they are putting upon the market has been approved by the Municipal Water Works Commissioner.

It is probable that a reduction in freight rates on cast iron pipe will be made. The manufacturers of cast iron pipe have asked that a reduction be made to conform to the reduced rates on pig iron and billets which went into effect on February 1.

A gas valve for use on open hearth steel furnaces has been invented by Jos. Riddell of the Shenango Machine Company, and Bert Patterson, foreman of the pattern department of the same works, at Sharon, Pa. It will be known as Riddell-Patterson gas valve, under which name a patent has been applied for. It is stated the valve has been adopted at the Sharon works of the National Steel Company.



## The Iron and Metal Trades.

The trade is almost at a standstill pending the developments in the project for a huge consolidation which are now approaching a close. The critical period of accepting or rejecting the terms offered is at hand, but the opinion seems to prevail that the scheme, possibly not at first in all its extent and all its ramifications, will be carried through. As outlined now it is to embrace the Carnegie, Federal, American Steel & Wire, the National and their affiliated companies, the National Tube, the Rockefeller Mesaba ore and transportation interests and the American Bridge Company.

So far as current developments in the trade are concerned the Pig Iron statistics, which are compiled every month, are significant. The coke and anthracite furnaces increased their weekly capacity by 26,600 tons per week, thus carrying the production up to a rate of about 14,000,000 tons per year. Yet the furnace stocks show a falling off of about 6000 tons. We find upon an examination of the details that the reduction of stocks has come chiefly from the idle furnaces, which more than balanced the addition to stocks on the part of the active plants.

Considering the fact that this has taken place in a month in which melting is never very active, and that in the face, too, of an expanding production, it is quite evident that consumption is proceeding on a very liberal scale. That such is the case is confirmed by the reports of scarcity of spot Billets, premiums being paid for quick delivery; by the statements relative to the Wire industry, the leading interest having taken orders this month at the rate of 8000 tons a day; by the reports of the Rail sales, now aggregating 1,650,000 tons, and by the reports of an exceptional tonnage in Cast Iron Pipe, Steel Plates, Sheets, Merchant Pipe and other lines. The leading bridge interest report that in January the extraordinary tonnage of 60,000 tons of orders was taken.

The Bessemer Pig market in Pittsburgh has strengthened and higher prices are being asked and, occasionally, obtained. In Foundry Iron the quietness and tendency to weakness continues.

Chicago reports some quite heavy transactions in Steel, the sales aggregating about 30,000 tons.

The market in Plates, Shapes and Sheets has been quite active.

In the metal trades the friction between certain interests in the American Smelting & Refining Company is attracting much attention. It does not seem likely to have an immediate effect upon the market for the metal.

## A Comparison of Prices.

At date, one week, one month and one year previous.

### Advances Over the Previous Month in Heavy Type. Declines in Italics.

	Feb. 13, 1901.	Feb. 6, 1901.	Jan. 16, 1901.	Feb. 15, 1900.
<b>PIG IRON:</b>				
Foundry Pig, No. 2, Standard, Philadelphia.....	\$15.25	\$15.25	\$15.50	\$22.50
Foundry Pig, No. 2, Southern, Cincinnati.....	12.75	13.25	13.25	20.25
Foundry Pig, No. 2, Local, Chicago.....	14.50	14.50	14.75	23.50
Bessemer Pig, Pittsburgh.....	14.00	13.50	13.00	24.90
Gray Forge, Pittsburgh.....	13.15	13.00	13.00	21.00
Lake Superior Charcoal, Chicago....	17.50	18.50	18.50	25.00
<b>BILLETS, RAILS, ETC.:</b>				
Steel Billets, Pittsburgh.....	19.75	19.75	19.75	33.00
Steel Billets, Philadelphia.....	21.00	21.00	21.00	36.00
Steel Billets, Chicago.....	20.75	20.75	20.75	nom.
Wire Rods (delivered).....	35.00	35.00	35.00	nom.
Steel Rails, Heavy, Eastern Mill....	26.00	26.00	26.00	33.00
Spikes, Tidewater.....	1.50	1.50	1.50	2.65
Splice Bars, Tidewater.....	1.30	1.30	1.30	2.25
<b>OLD MATERIAL:</b>				
O. Steel Rails, Chicago.....	12.00	12.00	12.00	19.00
O. Steel Rails, Philadelphia.....	15.50	15.50	15.00	22.00
O. Iron Rails, Chicago.....	18.00	18.00	18.50	23.50
O. Iron Rails, Philadelphia.....	18.50	18.00	18.00	26.00
O. Car Wheels, Chicago.....	16.50	16.50	16.00	24.00
O. Car Wheels, Philadelphia.....	17.00	17.00	17.00	22.00
Heavy Steel Scrap, Chicago.....	12.00	12.00	12.00	17.00
<b>FINISHED IRON AND STEEL:</b>				
Refined Iron Bars, Philadelphia.....	1.35	1.40	1.45	2.90
Common Iron Bars, Chicago.....	1.45	1.45	1.45	2.30
Common Iron Bars, Youngstown....	1.30	1.30	1.30	2.15
Steel Bars, Tidewater.....	1.35	1.38	1.40	2.40
Steel Bars, Pittsburgh.....	1.25	1.25	1.25	2.30
Tank Plates, Tidewater.....	1.55	1.55	1.55	2.35
Tank Plates, Pittsburgh.....	1.40	1.40	1.40	2.20
Beams, Tidewater.....	1.63	1.63	1.63	2.40
Beams, Pittsburgh.....	1.50	1.50	1.50	2.25
Angles, Tidewater.....	1.53	1.53	1.55	2.40
Angles, Pittsburgh.....	1.40	1.40	1.40	2.25
Skelp, Grooved Iron, Pittsburgh....	1.46	1.45	1.50	1.90
Skelp, Sheared Iron, Pittsburgh....	1.50	1.50	1.55	2.25
Sheets, No. 27, Pittsburgh.....	2.85	2.85	2.85	2.90
Barb Wire, f.o.b. Pittsburgh.....	2.90	2.90	2.80	3.80
Wire Nails, f.o.b. Pittsburgh.....	2.30	2.30	2.30	3.30
Cut Nails, Mill.....	2.05	2.05	1.95	2.50
<b>METALS:</b>				
Copper, New York.....	17.00	16.87½	16.87½	16.25
Spelter, St. Louis.....	3.75	3.77½	3.92½	4.60
Lead, New York.....	4.37½	4.37½	4.37½	4.70
Lead, St. Louis.....	4.17½	4.17½	4.17½	4.60
Tin, New York.....	26.45	26.35	26.50	30.10
Antimony, Hallett, New York.....	9.25	9.25	9.25	9.75
Nickel, New York.....	55.00	55.00	55.00	58.00
Tin Plate, Domestic Bessemer, 100 lbs., New York.....	4.19	4.19	4.19	4.84

## Philadelphia.

Office of *The Iron Age*, Forrest Building,  
PHILADELPHIA, PA., February 12, 1901.

The market for Iron and Steel during the week has been extremely dull, and prospects for the immediate future are not much better. There is a kind of impression that nothing much will be done until after the Carnegie deal is closed, but it is difficult to see how that can affect things, but in dull times one excuse is probably as good as another. If it is going to be as good a thing in regard to prices as some people seem to imagine, one would suppose that buying would commence immediately, so as to forestall any advance; but there are no indications of any movements of that kind—the trade are simply waiting, and apparently not greatly interested on either side. The fact is the deal is too big and too wide in its ramifications to be properly understood, and until the facts and details are given out it is not likely to receive more than passive attention. It is certain, however, that deals of this kind cannot make business. They may control prices, but if they are made too high it will affect consumption, which, after all, is the mainstay of the market. Possibly the market may stand \$1 or \$2 of an advance, but, compared with prices three or four years ago, they are already at a pretty high limit. Certain it is that the export trade must be done at much lower figures (if done at all), and it then becomes a question whether American consumers can distribute manufactured articles abroad if they have to pay higher prices for raw material than their foreign competitors. It will be a tremendous problem to secure the returns which are promised on \$1,000,000,000 of more or less watered stock and at the same time furnish Iron and Steel at reasonable prices. It may be possible to do it, but the trade generally want to see how it is to be done, and in the meanwhile they are disposed to stand aside and wait for the demonstration.

**Pig Iron.**—The past week has been in most respects a duplicate of the one preceding. Prices have been easy and have worked somewhat lower, but there is very little demand even at the extreme concessions. Consumers will take what they need, covering, say, 60 or 90 days when prices are made low enough, but there is no disposition to make long contracts. A point has been reached at which the trade have no confidence in their own judgment, and that always means a dull, waiting market. Something must be developed before there is a confident feeling, and while \$1 per ton or thereabouts is regarded as about the extreme limit, either for advance or decline, it is very uncertain which will come first, the present feeling among buyers being that they are not risking much by waiting. The furnace report will probably give some fairly clear indication of the course of events in the near future, but in the meanwhile the feeling is very conservative. Sales during the week have been of an uneven and unsatisfactory character, prices not unfrequently being made at figures which somebody else is reported to have quoted. In other words, some sellers are meeting the market, and if their own price is not acceptable they just drop to a figure which is said to have been quoted by competing bidders. The usual range has been about as follows (but in some cases exceptional rates are mentioned) for city or nearby points: No. 1 X Foundry, \$16 to \$16.25; No. 2 X Foundry, \$15.25 to \$15.75; No. 2 Plain, \$14.65 to \$15; Standard Gray Forge, \$14.25 to \$14.50; Ordinary Gray Forge, \$13.75 to \$14; Basic (Chilled), \$14.50 to \$14.75; Basic (Sand), \$14 to \$14.25.

**Billets.**—There is not much demand, but Steel is scarce, and in some cases 50 to 75 cents premium has been paid for prompt shipments, nominal rates being \$21 for Bessemer and \$22 for Open Hearth Steel.

**Plates.**—The volume of business is satisfactory, although not as rushing as it was some time ago. Orders on the books are very large, however, and the amount in prospect is really enormous. Boiler and marine work never was in any such magnitude as it is at the present time, and so far as regards the Plate mills they will doubtless have all the work they can manage this year. Prices unchanged, as follows—viz., for nearby points: Plates,  $\frac{1}{4}$ -inch and thicker, 1.55c. to 1.60c.; Universals, 1.55c. to 1.60c.; Flange, 1.65c. to 1.75c.; Charcoal Iron Plates, C. H. No. 1, 2.25c.; Best Flange, 2.75c.; Fire Box, 3.25c.

**Structural Material.**—This interest is so closely allied with the preceding one, that what refers to Plates in a large measure applies to Shapes also. It goes without saying, therefore, that business is good, mills fully employed and likely to continue so for an indefinite period. Prices as follows for seaboard or nearby points: Angles, 3-inch and upward, 1.65c. to 1.75c.; less than 3-inch, 1.50c. to 1.60c.; Beams and Channels, 15-inch and upward, 1.65c. to 1.75c.

**Bars.**—The demand for Iron Bars is fair, but there is a disposition to secure full lines of business, and to that end prices are a little easy. It is claimed that 1.35c. to 1.40c. at mill is the best that can be done for Refined Iron, but in some cases deliveries have been made (on light freight rates) at about what are quoted as mill prices. Prospects are fairly encouraging, however, and it is thought that with better weather the demand for iron will increase, as very little outdoor work can be done at present. Prices are about as follows for city and nearby deliveries: Steel Bars are firm at 1.40c. to 1.50c. and Iron Bars from 1.40c. to 1.50c.

**Sheets.**—The demand is as urgent as ever, and mills are full of work at unchanged prices, and with excellent prospects ahead of them. Prices for best Sheets as follows (common Sheets two-tenths less): No. 10, 2.25c.; No. 14, 2.45c.; No. 16, 2.65c.; Nos. 18-20, 3.15c.; Nos. 21-24, 3.25c.; Nos. 26, 27, 3.30c.; No. 28, 3.45c. to 3.50c.

**Old Material.**—The market is in a peculiar position. Buyers lower their bids and say they cannot pay such high prices, but sellers hold on, and while only limited quantities of material are taken, they seem to get their prices, so that practically there is no change from last week. Bids and offers for deliveries in buyers' yards are about as follows: Choice Railroad Scrap, \$18 to

\$19; No. 1 Yard Scrap, \$13 to \$14; No. 2 Light Scrap, \$11.50 to \$12.50; Machinery Cast, \$14 to \$14.50; Heavy Steel Scrap, \$15.75 to \$16.25; Old Iron Rails, \$18.50 to \$19.50; Old Steel Rails, \$15.50 to \$16; Wrought Turnings, \$10 to \$10.50; Cast Borings, \$8 to \$8.25; Old Car Wheels, \$17 to \$18; Iron Axles, \$20 to \$22; Steel Axles, \$17 to \$18.

Pilling & Crane of Philadelphia have been appointed exclusive sales agents for the product of Iron Ore mined at Port Henry, N. Y., owned and controlled by Witherbee, Sherman & Co. In addition to the various grades of Ore heretofore shipped, large quantities of coarse concentrates, rich in metallic Iron, will be produced from a plant recently completed. Pilling & Crane have established branch offices at 56 Pine street, New York, in charge of Lewis W. Francis, for the transaction of their general business in Ores, Iron and Fuel.

## Chicago. (By Telegraph.)

Office of *The Iron Age*, 1205 Fisher Building, {  
CHICAGO, February 13, 1901. }

The Steel situation is particularly strong. Billet manufacturers now claim to be completely sold up and inquiries for large quantities have been turned down within the time desired, which is the first half of the year. Activity prevails in most branches of finished products, and even Foundry Pig Iron has shown some disposition to move. The feeling is growing that prices are more likely to advance than decline. Manufacturers of Pig Iron are also beginning to take this position, although recently the indications in that line have been the other way.

**Pig Iron.**—The situation was quite unsatisfactory for a portion of the past week. Large consumers had been in the market with inquiries for round lots, and on finding a great deal of competition for their business, withdrew, expecting to do better. Other buyers then appeared, to whom sales were made at low prices by some of the Southern furnace companies, but special causes contributed to this condition, which are claimed to have passed. Subsequently a more general buying movement sprung up and a much larger volume of business was placed than for some time. The week's transactions included one sale of 4000 tons and quite a number running 1000 tons and under. Prices now ruling show recession, but not so much as had been anticipated. It is claimed that the conditions prevailing in the Foundry Pig Iron trade are local and only temporary, and that within a reasonable time the strength of the Steel market will be imparted to all kinds of Pig Iron, and prices may be considerably higher. Our quotations represent the market on moderate sized quantities, special prices having been made on the larger lots referred to. Quotations are as follows:

Lake Superior Charcoal.....	\$17.50 to \$18.00
Local Coke Foundry, No. 1.....	15.00 to 15.50
Local Coke Foundry, No. 2.....	14.50 to 15.00
Local Coke Foundry, No. 3.....	14.00 to 14.50
Local Scotch, No. 1.....	15.00 to 15.50
Ohio Strong Softeners, No. 1.....	16.00 to 16.25
Southern Silvery, according to Silicon.....	15.00 to 15.50
Southern Coke, No. 1.....	14.65 to 15.10
Southern Coke, No. 2.....	14.15 to 14.65
Southern Coke, No. 3.....	13.85 to 14.10
Southern Coke, No. 1 Soft.....	14.65 to 15.10
Southern Coke, No. 2 Soft.....	14.15 to 14.65
Foundry Forge.....	13.15 to 13.65
Gray Forge and Mottled.....	13.15 to 13.65
Southern Charcoal Softeners, according to Silicon.....	15.00 to 17.00
Tennessee Silicon Pig.....	16.50 to 18.00
Alabama and Georgia Car Wheel.....	19.60 to 20.35
Malleable Bessemer.....	15.00 to 15.50
Standard Bessemer.....	15.00 to 15.50
Jackson County and Kentucky Silvery, 8 per cent. Silicon.....	17.50 to 18.50

**Bars.**—Trade continues fully as active as reported last week. Contracts are steadily being made by manufacturing consumers generally, although the car building trade is perhaps not quite so conspicuous as a short time since. The leading manufacturers of Bar Iron are maintaining prices, but some of the small mills are making some concessions to secure the class of orders coming within their scope. Steel Bars are hard to get, as the mills are still well sold up and are now considerably behind on deliveries. The strength of the Steel situation is expected to divert much business to the Bar Iron mills and put that branch of trade into better condition. Mill



shipments of Common Iron are quoted at 1.45c.; Soft Steel Bars, 1.40c. to 1.45c., and Hoops, 1.85c., base, Chicago. Jobbers continue to enjoy a very good demand from stock. Prices of small lots are maintained at 1.75c. to 1.80c. for Common Iron, 1.65c. to 1.75c. for Steel Bars, and 2.10c. to 2.35c. for Hoops.

**Structural Material.**—The National Life Building, requiring 2500 to 3000 tons, will shortly be placed under contract. Other new building projects are taking shape and much business is to be expected in this line. The demand for small lots of Shapes from all classes of consumers keeps up remarkably well for the season. Mill shipments are quoted as follows: Beams, Channels and Zees, 15 inches and under, 1.65c.; 18 inches and over, 1.75c.; Angles, 3 inches and over, 1.55c.; Angles, under 3 inches, 1.55c. rates; Tees, 1.70c.; Universal Plates, 1.55c. to 1.60c. Small lots of Beams and Channels from local yards are quoted at 2.10c. to 2.25c.; Angles, 1.60c. to 1.70c. rates, and Tees, 1.75c. to 1.85c.

**Plates.**—Sales by the local mill have considerably exceeded its tonnage for the week. Transactions on account of outside mills have also been very good. Jobbers are further reporting an increasing trade. They are more easily obtaining the full combination prices now, which indicates that the weakening elements in the market have been eliminated. Mill shipments of Tank Plate, 3/4-inch and heavier, in carload lots, are quoted at 1.55c. to 1.60c., Chicago; Flange, 1.65c.; Marine, 1.75c. Jobbers quote small lots from store at 1.80c. to 2c. for Tank, and 2.10c. to 2.25c. for Flange.

**Sheets.**—Pronounced activity still prevails. Manufacturers are not now promising delivery inside of six weeks, yet orders continue to be received. The demand is heaviest for Galvanized, but trade in Black is very good. No information can be secured as to the possibility of an early advance, but manufacturers say that no decline is to be feared. Jobbers are having a large business, which keeps their stocks light. Mill shipments of No. 27 Black are quoted at 3.15c., Chicago, while Galvanized Sheets are held at 70 and 7 1/2 off. Small lots from stock are quoted at 3.30c. to 3.40c. for No. 27 Black, 2.40c. for No. 16, 2.30c. for No. 14, 2.10c. for No. 12, 2c. for Blue Annealed No. 10, and 70 off for Galvanized.

**Merchant Pipe.**—The situation is unchanged, the demand being fair and prices maintained. Manufacturers' prices, random lengths, are as follows:

	In carloads.	Less than Blk. Galvd. carloads.	Blk. Galvd.
1/2 to 3/4 inch and 11 to 12 inches.....	59.2	46.2	54.9 40.9
3/4 to 10 inches.....	66.7	53.3	61.9 49.9

**Boiler Tubes.**—Jobbers are having a continued good demand from stock and prices are well held. We quote from store as follows:

	Steel.	Iron.
1 to 2 1/4 inches, inclusive.....	50	40
2 1/4 inches.....	50	42 1/2
2 1/4 to 3 inches.....	60	50

**Rails and Track Supplies.**—Sales of Heavy Sections of Steel Rails in this territory have amounted to some 20,000 tons during the week. Numerous inquiries are being received and much more tonnage remains to be placed. The discussion of advancing prices continues, and while indications strongly favor an advance no time has yet been designated. The trade on Light Rails has been very good, the aggregate for the week having been about 3000 tons. Included in these sales were good tonnages for export to Mexico, Hawaii and Australia. Track Supplies are in strong demand, with considerable trouble experienced in getting satisfactory deliveries of Bolts. Heavy Sections of Steel Rails are quoted at \$26 and Light Sections at \$25.50 to \$28, according to weight. Splice Bars, 1.30c. to 1.40c.; Spikes, 1.60c. to 1.75c., from mill; Track Bolts, with Hexagon Nuts, 2.55c. to 2.60c., and with Square Nuts, 2.40c. to 2.45c.

**Billets.**—The Billet sales aggregated 20,000 tons of Bessemer and 10,000 tons of Open Hearth. Some of these sales were made at the combination price, and others were considerably above it. It is now very difficult to secure either Bessemer or Open Hearth Billets, as manufacturers are stated to have their capacity cov-

ered to July 1. Bessemer Billets are quoted at \$20.75 to \$21.75, and Open Hearth Billets at \$21.75 to \$25, according to specifications and quantity.

**Merchant Steel.**—New business is light, but specifications against contracts are being very freely received by manufacturers. Mill shipments, Chicago delivery, are quoted as follows: Smooth Finished Machinery Steel, 1.75c. to 1.90c.; Smooth Finished Tire, 1.75c. to 1.95c.; Open Hearth Spring Steel, 2.15c. to 2.40c.; Toe Calk, 2.40c. to 2.60c.; Sleigh Shoe, 1.70c. to 1.90c.; Cutter Shoe, 2.40c. to 2.60c.; Cold Rolled Shafting, 55 off. Ordinary grades of Crucible Tool Steel are quoted at 6c. for carloads and 7c. from store; Specials, 13c. upward.

**Old Material.**—The market is quiet, but the scarcity in some lines is causing prices to be well maintained. Stocks of other grades are heavy and offerings are freely made, causing prices to be somewhat soft on those articles. Low Phosphorus Scrap is in much better demand at higher prices. The following are approximate quotations per gross ton:

Old Iron Rails.....	\$18.00 to \$18.50
Old Steel Rails, mixed lengths.....	12.00 to 12.50
Old Steel Rails, long lengths.....	14.50 to 15.00
Heavy Relaying Rails.....	20.00 to 22.00
Old Car Wheels.....	16.50 to 17.00
Heavy Melting Steel Scrap.....	12.00 to 12.50
Mixed Steel.....	9.50 to 10.00
No. 1 Busheling.....	10.00 to 11.00
No. 2 Busheling.....	9.00 to 9.50

The following quotations are per net ton:

Iron Fish Plates.....	\$16.00 to \$16.50
Iron Car Axles.....	18.50 to 19.00
Steel Car Axles.....	15.00 to 15.50
No. 1 Railroad Wrought.....	14.00 to 14.50
No. 2 Railroad Wrought.....	12.00 to 12.50
Shafting.....	15.00 to 16.00
No. 1 Dealers' Forge.....	11.00 to 11.50
Iron Axle Turnings.....	9.00 to 9.50
Soft Steel Axle Turnings.....	8.00 to 8.50
Machine Shop Turnings.....	7.00 to 7.50
Cast Borings.....	3.00 to 3.50
Mixed Borings, &c.....	4.00 to 4.50
No. 1 Boilers, cut.....	9.00 to 9.50
No. 2 Boilers, cut.....	7.50 to 8.00
Heavy Cast Scrap.....	11.50 to 12.00
Stove Plate and Light Cast Scrap.....	8.00 to 8.50
Railroad Malleable.....	11.50 to 12.00
Agricultural Malleable.....	10.00 to 10.50

**Metals.**—The market is quiet for all kinds of Metals. Carload lots of Lake Superior Copper are quoted at 17 1/2c., and Casting brands 17 1/4c. Desilverized Pig Lead is held at 4.32 1/2c., and Corroding 4.42 1/2c., in 50-ton lots.

**Coke.**—Considerable business is steadily being done in making contracts for Coke. Seventy-two hour Foundry Coke is unchanged at \$4.50 to \$5.

## St. Louis. (By Telegraph.)

Office of The Iron Age, 1205 Chemical Building {  
St. Louis, February 13, 1901. }

**Pig Iron.**—It may safely be said that more activity prevails in the Pig Iron market this week. Not that any unusual contracts have been made, but that buying was more generally entered into by foundrymen. One agency reports that sales thus far in February practically equal in tonnage those for entire January. The largest known transaction of the week is for 500 tons. Interest in the market is more apparent, nevertheless some buyers are still of the opinion that prices are liable to change. We quote, f.o.b. St. Louis:

Southern No. 1 Foundry.....	\$14.00 to \$14.25
Southern, No. 2 Foundry.....	13.50 to 13.75
Southern, No. 3 Foundry.....	13.00 to 13.25
No. 1 Soft.....	14.00 to 14.25
No. 2 Soft.....	13.50 to 13.75
Gray Forge.....	12.25 to 12.50

**Bars.**—Trade in Bars is in very satisfactory shape. Mills state specifications on contracts are coming forward in good volume. Stipulations for immediate shipment are especially noticeable. Mill prices for both Iron and Steel in heavy tonnage are 1.45c. to 1.50c., half extras, East St. Louis. Jobbers' prices on less than carloads are 1.75c. to 2c., full extras.

**Rails and Track Supplies.**—The Southern roads are doing some active track work and orders for Track Supplies are consequently on the increase. As in other lines, the demand for quick shipment is pronounced. We quote Splice Bars, 1.50c. to 2c.; Bolts, with Square Nuts, 2.20c. to 2.30c.; with Hexagon Nuts, 2.30c. to 2.40c.; Spikes, 1.65c. to 1.75c.

**Pig Lead.**—Fairly good movement of Lead is noted. The spring demand is reported as opening up. Common

Missouri is selling at 4.17½c. Chemical is 4.20c. bid. Four cars Chemical were sold at 4.22½c. for March delivery. Desilverized is still at 4.32½c. Lead Ore unchanged at \$45 per ton.

**Spelter.**—Report of recent consolidation in the East is causing decided interest here. It is claimed that at present no options are held on any plant in the territory, excepting perhaps one. Sellers are said to be awaiting developments. No special activity is reported in Spelter. Price fell off to 3.70c. since last report, but is to-day nominally 3.75c. One buyer made contracts at 3.77½c. The Cherokee-Lanyon Spelter Company on Sunday last lost by fire at Gas City, Kan., one block of two furnaces. The building was destroyed and one furnace will have to be rebuilt. The shipments of Zinc Ore to foreign points are reported as not large enough to cause comment. It is inferred that the freight rate of \$8 to \$9 from Joplin to Swansea on Ores is rather prohibitive. Ore prices increased. Special top grade brought \$29. The assay basis for 60 per cent. Ore is \$24.

The Robert Field Company, sales agents for Pig iron and Coke, whose offices are located at St. Louis, Mo., and Columbus, Ohio, have engaged as Western traveling representative Irvin McDowell, who is familiar with that trade.

De Camp Bros. & Yule, offices Union Trust Building, St. Louis, Mo., have been appointed agents in St. Louis and Western territory for the Dayton Coal & Iron Company, whose furnaces are in Dayton, Tenn.

## Pittsburgh.

Office of *The Iron Age*, Hamilton Building, 1  
Pittsburgh, February 13, 1901. {

(By Telegraph.)

**Pig Iron.**—It is possible that the Ore Association will announce the price of Ores for this year delivery this week. It is the general belief that Bessemer will be \$4.50 a ton. The Pig Iron market is firm and Standard Bessemer is held at \$13.25, Valley furnace, or \$14, Pittsburgh. However, there have been no large sales at this period. An Eastern Steel mill has bought about 10,000 tons of Standard Bessemer, which was piled up at one of the Valley furnaces, at about \$13 at furnace. Another consumer bought 5000 tons last week at \$13.75, Pittsburgh. These are the only large transactions in the past week. Small lots of Bessemer have sold up to \$13.10 and \$13.15 at furnace. Forge Iron is firm at \$12.50, or \$13.25, Pittsburgh, but sales were made last week at \$13.15, Pittsburgh. Foundry Iron is quiet and some low prices are being made. We quote Bessemer \$13.25, Valley furnace, or \$14, Pittsburgh; Gray Forge, \$13.15 to \$13.25; No. 2 Foundry, \$13.75 to \$14, Pittsburgh. We note a sale of 500 tons of Gray Forge at \$13.15, Pittsburgh; also a sale of 100 tons of No. 2 Foundry at about \$14, Pittsburgh.

**Billets.**—There is an actual scarcity of small Billets and we are advised that sales have been made where premiums have been paid of 50c. to \$1 a ton above pool prices for prompt delivery. It is expected that after the Carnegie deal is closed the Billet pool will hold a meeting and advance prices. We note a sale of 3500 tons of small Billets at a slight advance over pool price. We quote Bessemer Billets, Pittsburgh, Wheeling and the Valleys, at \$19.75, delivered. Billets smaller than 3½ inches are \$1 extra. Carbons higher than 0.21 and up to 0.60 are \$1 extra; 0.61 up to 1 are \$2 extra. Basic Open Hearth Steel, \$1 a ton extra over the price of Bessemer. For cutting small Billets, 50c. per ton extra.

**Sheet and Tin Bars.**—The market is active and prompt deliveries of Bars are very difficult to get. We quote Sheet and Tin Bars at \$20.75, delivered, Pittsburgh, Wheeling and Valley districts. For cutting Sheet and Tin Bars, 50c per ton extra.

**Muck Bar.**—We quote Standard grades at \$24.75 to \$25, Pittsburgh.

(By Mail.)

There is only one topic of interest in the Iron trade to-day, and that is the Carnegie deal, which is occupy-

ing everybody's attention. Nothing official has been given out here by any of the Carnegie Steel Company people, but advices from New York are that the deal may be closed up far enough to allow public announcement to be made this week. C. M. Schwab was in Pittsburgh Monday, but went to New York last night to remain, it is stated, the balance of the week. All sorts of rumors are going as to what the consolidation will embrace, but, as stated above, nothing authentic has been given out. Persistent report has it that a grand consolidation of the principal Steel companies will be made, this to include Federal Steel Company, Carnegie Steel Company, National Tube Company, American Steel & Wire Company, American Bridge Company, the four Moore properties, the railroad and Ore interests of Rockefeller, and perhaps Tennessee Coal & Iron Company. The report further states that C. M. Schwab is to be the head of this mammoth consolidation. However, nothing is known absolutely, and the trade are awaiting with much interest official announcement of the completion of the deal. There may be many important changes made. Head officials of the Carnegie Steel Company will probably be taken to New York, others may be deposed and a grand change all around will occur. It will be a relief when the exact situation has been given out. The effect of the Carnegie deal and the other Steel deals as well has been to put the Iron trade on a firmer basis, and prices of Pig Iron, Billets and all kinds of Finished Material are very strong, with a decided upward tendency. Bessemer Pig Iron has sold freely at \$13 to \$13.10, Valley furnace, and the Valley furnaces are quoting \$13.25 at furnace, or \$14, Pittsburgh; but we are not advised of any sales at that price. Steel Billets for prompt shipment still demand a premium of 25c. to 50c. a ton above pool price. There has been no actual advance in Finished Material, but prices all along the line are strong. The Coke trade is active, more than 95 per cent. of the ovens in the Connellsville region being in blast. Prices on Coke are strong, and may be advanced.

**Ferromanganese.**—We quote domestic 80 per cent. at \$62.50 a ton, delivered at buyer's mill. Small lots are quoted higher.

**Plates.**—The Plate Association met in New York, Thursday, February 7, but made no change in prices. It is not probable there will be much legislation in the Plate or other trades until the exact status of the Carnegie deal is known. There is a moderate demand for Plates, and prices are strong. A particularly good inquiry for the higher grades of Fire Box Steel is reported. Association prices are as follows: Tank quality, ¼-inch and heavier, 1.40c.; 3-16-inch, 1.45c.; under 3-16-inch and above No. 10, 1.50c.; Flange or Boiler Steel, 0.1c. advance over base of Tank; Marine and Fire Box, American Boiler Manufacturers' Association specifications, 0.2c. advance over Tank; Still Bottom Steel, 0.3c. advance over Tank; Locomotive Fire Box Steel and equivalent specifications, 0.5c. advance over Tank, all f.o.b. Pittsburgh.

**Structural Material.**—No large contracts have been given out in the last few days. A good deal of work is being figured on, and will be placed in a short time. The American Bridge Company are doing a very large foreign trade, and have taken additional tonnage for export in the past week. We quote: Beams and Channels, up to 15-inch, 1.50c.; over 15-inch, 1.60c.; Angles, 3 to 6 inches, inclusive, 1.40c.; over 6 inches, 1.50c.; under 3 inches, 1.25c.; Zees, 1.50c.; Tees, 1.55c.; Steel Bars, 1.25c. to 1.35c., half extras, at mill; Universal and Sheared Plates, 1.40c., all f.o.b. Pittsburgh.

**Sheets.**—The Sheet trade continues active, and prices are strong. The product of several of the Sheet mills is under contract up to July 1. We quote No. 27 Black Sheets, box annealed, one pass, at 2.85c. to 2.90c.; No. 28, 2.95c. to 3c. We quote Galvanized Sheets at 70, 10 and 5 per cent. in carload lots, but for very attractive orders 75 per cent. off at mill is sometimes quoted.

**Merchant Steel.**—There is only a fair demand, the mills running mostly on old contracts, specifications on which are coming forward very freely. Prices are firm.



and we quote: Plow Slabs,  $\frac{1}{4}$ -inch and heavier, at 1.60c., base; Tire Steel, 1.35c. to 1.40c.; Toe Calk, 1.70c. to 1.75c.; Open Hearth Machinery, 2c., base; Open Hearth Spring, 2c., base; Hammered Lay Steel, 3c. to 3.25c.; Rolled Lay Steel, 2.75c. to 3c.; Cold Rolled and Cold Drawn Shafting, 55 per cent. off in carload lots; 50 per cent. in less than carload lots, delivered in base territory. Tool Steel, 7c. and upward, according to quality. On Tool Steel freight is allowed east of the Mississippi River.

**Steel Rails.**—No large lots have recently been placed. We quote Standard Sections at \$26 at mill.

**Skelp.**—Some of the Skelp mills in the Wheeling district have had several break downs recently, and are considerably behind in deliveries. The Skelp market is firmer than it was, and slightly higher prices are being realized. We quote Grooved Iron Skelp at 1.45c. to 1.50c.; Sheared at 1.50c. to 1.55c. We quote Grooved and Sheared Steel Skelp at 1.32 $\frac{1}{2}$ c. to 1.35c., all f.o.b. Pittsburgh; terms four months, or 2 per cent. off for cash in 30 days.

**Tubular Goods.**—There is a moderate demand, and the tone of the market is strong, with the exception of Boiler Tubes, prices on which are occasionally shaded by some of the small mills. Prices to consumers in carload lots are as follows:

Merchant Pipe.		
	Per cent. Black.	Per cent. Galvd.
$\frac{1}{4}$ to $\frac{1}{2}$ inch and 11 to 12 inch.....	61	48
$\frac{3}{4}$ to 10 inch.....	68 $\frac{1}{2}$	56
Casing, Random Lengths.		
	S. & S.	I. J.
2 to 3 inch.....	58	53 $\frac{1}{2}$
3 $\frac{1}{4}$ to 4 inch.....	63	59
4 $\frac{1}{4}$ to 12 $\frac{1}{2}$ inch.....	65	61 $\frac{1}{2}$
Casing, Cut Lengths.		
	S. & S.	I. J.
2 to 3 inch.....	53 $\frac{1}{2}$	49
3 $\frac{1}{4}$ to 4 inch.....	59	55
4 $\frac{1}{4}$ to 12 $\frac{1}{2}$ inch.....	61 $\frac{1}{2}$	57 $\frac{1}{2}$
Boiler Tubes.		
	Steel.	Up to 22 feet. Per cent.
1 inch to 1 $\frac{1}{4}$ inch and 2 $\frac{3}{4}$ inch to 5 inch, inclusive....		65 $\frac{1}{2}$
2 inch to 2 $\frac{1}{2}$ inch, inclusive.....		63
6 inch and larger.....		62
Iron.		
1 inch to 1 $\frac{1}{4}$ inch and 2 $\frac{1}{2}$ inch.....		49 $\frac{1}{2}$
1 $\frac{1}{4}$ inch to 2 $\frac{1}{4}$ inch.....		45
2 $\frac{1}{4}$ inch to 13 inch.....		57

Jobbers are quoted 5 per cent. or more lower than the above prices.

**Coke.**—Of the 21,413 ovens in the Connellsville region, 18,168 are active and 3245 idle, the output last week being 211,899 tons. Prices on Coke are strong, and we quote strictly Connellsville Furnace at \$1.75 and 72-hour Foundry at \$2.25 a ton. Main Line Coke is offered at lower prices.

## Cincinnati. (By Telegraph.)

Office of The Iron Age, Fifth and Main streets, Cincinnati, February 13, 1901.

There is but little interest being shown by buyers, and on that account the Pig Iron market is dull and rather heavy. What trading there has been was in a retail sort of way, with no single transaction sufficiently important to attract notice. The total tonnage, however, has been fair for the circumstances. Most of the Iron selling has been on the basis of \$10.25 for No. 2 and \$9 for No. 4 and Gray Forge, Birmingham, basis. Some sellers are declining to sell, except on a basis of 25c. above these figures, and others think the market weak and 25c. lower. The market for Northern brands has been somewhat more active, though even there the trading has been in small quantities. Consumption is thought to be keeping up well. The Coke market is active, and there is no probability of a long extended quiet period, though the outlook for immediate activity is not good. Forge Irons are especially heavy. Freight rate from Birmingham is \$2.75 to this point; from Hanging Rock district, \$1. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1.....	\$13.75 to \$14.00
Southern Coke, No. 2.....	12.75 to 13.25
Southern Coke, No. 3.....	12.25 to 13.00
Southern Coke, No. 4.....	11.75 to 12.00
Southern Coke, No. 1 Soft.....	13.75 to 14.00
Southern Coke, No. 2 Soft.....	12.75 to 13.25
Southern Coke, Gray Forge.....	11.75 to 12.00
Southern Coke, Mottled.....	11.75 to 12.00
Ohio Silvery, No. 1.....	17.00 to 17.50

Ohio Silvery, No. 2.....	16.00 to 16.50
Lake Superior Coke, No. 1.....	15.25 to 15.75
Lake Superior Coke, No. 2.....	14.25 to 14.75
Lake Superior Coke, No. 3.....	13.25 to 13.75
Southern Basic.....	13.75 to 14.25

### Car Wheel and Malleable Irons.

Standard Southern Car Wheel, chilling grades.....	\$18.75 to \$19.75
Standard Southern Car Wheel, No. 2.....	17.75 to 18.75
Lake Superior Car Wheel and Malleable.....	19.00 to 20.00

**Plates and Bars.**—There has been some trading in a quiet way, with but very little change in selling basis. We quote, f.o.b. Cincinnati: Iron Bars, in carload lots, 1.40c., half extras; in small lots, 1.75c., with full extras; Steel Bars, in carload lots, 1.40c., with half Steel card extras; Base Angles, in carload lots, 1.50c. to 1.55c.; Plates, 1.55c. for  $\frac{1}{4}$ -inch and heavier; Sheets No. 1, 1.95c.

**Old Material.**—The market is quiet on an unchanged basis. Dealers' buying prices per gross ton are, f.o.b. Cincinnati: No. 1 Wrought Railroad Scrap, \$15; Cast Railroad and Machinery Scrap, \$11; Old Iron Axles, \$16.75; Iron Rails, \$18; Steel Rails, rolling mill lengths, \$13; short lengths, \$12; Car Wheels, \$15.

## Birmingham.

BIRMINGHAM, ALA., February 11, 1901.

About the same condition of affairs exists in the Iron market as was reported last week. There is a little more variation in statements as to the existing status of affairs, but when you boil them down you get pretty nearly the same skimming that was obtained last week. Those who are feeding the demand report a large inquiry, a fair business and a rather steady market. Those who are practically out of the market report a weak tone and a declining tendency. Your correspondent inclines to the latter diagnosis. Take No. 2 Foundry, which we have been quoting at \$10.75, with sales at \$10.50. This week the open quotation is \$10.50 and there is no attempt to send out higher quotations. Then, in the case of Gray Forge, in which one could not obtain quotations under \$9, there were sales at \$8.75, but the sellers will not admit it. "All the same," it is so. There are some who will not price this grade below \$9.15 nor accept an offer at less price. But the actual sales' prices constitute market values. One large interest had a heavy business offered to them the past week at prices just 25c. below what was demanded and declined it. The refusal to meet buyers' views was based on the ground that prices are reasonable and ought to be satisfactory, and that we are on the eve of an active buying movement that will quickly absorb any existing surplus. Reports still assert that buyers' stocks are literally nominal and that the buying movement can be delayed but comparatively a few days. But there is no use trying to conceal the fact that the volume of transactions, so far, has been disappointing. The greater part of the orders being placed is for the lower grades of Iron. The monthly examination of the sales book of the Tennessee Company by the miners' committee showed that for the month of January the average sales of Iron were below \$10. This shows that low grades were in demand last month; and it shows, further, that quotations are not always founded on actual transactions. The result of the examination was a reduction of 2 $\frac{1}{2}$ c. in mining wages.

C. E. Bueck, president of the Attala Iron Ore Company, has secured the Trussville Furnace and will put it in operation as soon as it can be made ready. The same party has sold to the Alabama Consolidated Company a tract of Iron Ore land near Gadsden, containing 1200 acres and having veins that carry both soft and hard Iron Ore. It is claimed that the soft Ores contain 52 to 54 per cent. Metallic Iron, while the hard Ores run about 40 per cent. The price paid for the tract is said to be \$120,000. Iron people familiar with the property state the Ore veins run from 18 inches to 3 feet. The mines are in working order and have been turning out about 200 tons per day. This output will probably be largely increased. The acquisition secures an abundant supply of Ore for long years to come for the Gadsden Furnace, and as the Ore is within a few miles of the furnace the cost of furnace delivery is about nominal. Another Ore deal of magnitude is, at this writing, in the last throes

of a conclusion. If it is concluded favorably the result will have an important bearing on the making of Iron in this district.

A new Coal company, styled the De Bardeleben Coal & Iron Company, have been formed. They are capitalized at \$250,000. While their principal object is to mine and sell Coal and Iron Ore, they have an elastic charter that covers about everything a corporation would desire to do.

The trade in Coke with the Pacific Coast and Mexico continues fine, those engaged in it being taxed to capacity to supply the demand.

The Southern car works now have their headquarters here and are laying off the ground on their site for the buildings of their plant. They have lately received orders from Mexico for a lot of Iron cars and from other sources orders for 500 cars of ordinary pattern and construction. The various Pipe works are "busy as bees." Orders of all sizes as to magnitude and almost of all sizes of Pipe are rushing in on them from all points of the compass in the domestic trade and from across the seas. The Pacific Slope and Mexico are good customers also. The Water Works Company are extending their mains to Pratt City and Ensley City, and locally everything looks to be in "fine feather." One of our most enterprising industries has secured a contract for six large Corliss engines to go to the island of Cuba. The firm of Hardie-Tynes Company, lately burned out, will in all probability erect new shops at North Birmingham. Their old site is too cramped for their greatly enlarged business.

## Metal Market.

Office of *The Iron Age*, 232-234 William street, (New York, February 13, 1901.)

**Pig Tin.**—Compared with last week the market at the close to-day is quite the same. Spot, February and March, are quoted 26.45c. to 26.50c. Earlier in the week, however, the market was about 25 points lower, and at this time purchases to a considerable extent were made here for London account. By the steamship "Kensington" 180 tons actually went out to-day, and further shipments to London are expected. The London market to-day showed a decline of nearly £1 from yesterday's price. The closing quotations to-day were £122 2s. 6d. for spot and £117 12s. 6d. for futures. Notwithstanding this decline the market here to-day showed firmness, but even so our quotation of to-day for spot is below the London quotation. Supplies here are large and good sized quantities are said will arrive during the month. The present state of affairs shows that the exports are made at a good profit.

**Copper.**—It is quite evident that the business which is now being transacted is coming in the direction of the large producers. Their policy for some time back has been to allow the smaller producers to sell at their own figure, while they remained out of the market at a figure perhaps a little higher than that which was being asked by the small producers waiting for the time when the latter would be sold up and then reaping the harvest at the high figure. The harvest time seems to be near at hand, for it has been found rather difficult during the last week to pick even straggling lots at figures below those which the large producers are asking. It is difficult to obtain Lake below 17c., but in Electrolytic the situation does not seem to be so strong. While 16½c. is quoted by the principal interests, it is said that business has been done during the week at figures ranging from 16½c. to 16.45c. The London market, after a spurt of 10 shillings, has lost it again and closed to-day £71 5s. for spot and £71 16s. 3d. for three months' futures. Best Selected is unchanged at £78.

**Pig Lead.**—Some time ago we hinted that there might be some friction among the directors of the American Smelting & Refining Company over the reorganization scheme which provides for the absorption of the properties and business of M. Guggenheim's Sons. The air is now full of this trouble. The latest development was marked yesterday by the resignation of Leonard Lewisohn and H. H. Rogers from the board of directors of the former corporation. The resignations will be acted

upon and doubtless accepted at the meeting of the stockholders of the company, which will be held next Saturday. This meeting it will be recalled is principally for the purpose of ratifying the action of the directors in the Guggenheim matter. The trouble arose through the abrogation by the American Smelting & Refining Company of arrangements which they had made with the American Smelting & Refining Company for the sale of a certain portion of their product. It will be recalled that the Lewisohn-Rogers interests were foremost in the organization and promoting of the American Smelting & Refining Company. In return for their efforts in this direction they were appointed as selling agents for a portion of the product of the company. This arrangement gave them the exclusive selling agency for all the silver produced by the company, and for the lead sold abroad. When the Guggenheim interests were virtually taken by the company this agreement was broken and the sales rights are to be turned over to the Guggenheims. Parties in the trade who are familiar with the details of the entire transaction express considerable indignation and show sympathy for the Lewisohn end of the affair. Whether or not a retaliatory movement will be set in motion by the United Metals Selling Company cannot be ascertained at this time. The market is very dull and prices here are unchanged. The American Smelting & Refining Company continue to quote 4.37½c. for lots of 50 tons and more, f.o.b. New York, and 4.32½c., St. Louis. The London market has further declined sharply and is weak at £15.

**Spelter.**—Is still very weak, and shows no sign of reaction. The market has continued to decline, both here and abroad. Spot to May is quoted here at 3.90c. to 3.95c., and shipments from the West are sold at 3.90c. St. Louis is down to 3.75c., and London has declined sharply, closing to-day at £17 12s. 6d. In another column will be found details of a proposed consolidation of the New Jersey Zinc Company and the General Chemical Company.

**Antimony.**—There is no change. Hallett's is quoted 9½c. and Cookson's 10¼c. Prices named for other brands are 8½c. to 9c.

**Nickel.**—The situation is unchanged, the metal being scarce at 55c. to 60c. for ton lots.

**Quicksilver.**—Has not been changed, prices quoted here remaining \$51 per flask of 76½ lbs., in lots of 50 flasks or more. The London market is unchanged at £9 2s. 6d.

**Tin Plate.**—A fair business is reported. The American Tin Plate Company are quoting on a basis of \$4.19 per box of standard 100-lb. Cokes, f.o.b. New York, and \$4, f.o.b. mill. These prices have been named to hold until June 1.

The Cincinnati Iron Store Company, who incorporated last month with a capital of \$50,000, have opened a large store at the corner of Pearl and Plum streets, Cincinnati, Ohio. Edw. H. Busch is president and general manager, George M. Clark, president of the Ohio Falls Iron Company of New Albany, Ind., is vice-president, and J. A. Sebastiani, late of Republic Iron & Steel Company, is secretary and treasurer. The company will carry a large stock of iron and steel bars, plates, sheets, angles, railway supplies, &c., and will be selling agents for Ohio Falls Iron Company, American Steel & Wire Company, Jones & Laughlins and the Cleveland City Forge Company.

Geo. M. Wilson of the Department of Public Works, Pittsburgh, Pa., opened bids last week for two compound condensing engines for the Brilliant pumping station, and for the testing of the engines. There were three bids for the engines, but that of the Henry R. Woththington Company was not considered because of a defective bond. The Camden Iron Works bid \$252,575 and the Wilson & Snyder Company \$240,000. For testing and inspecting the engines, T. P. Jones & Co. bid \$5950 and the Pittsburgh Testing Company \$2340. Robert W. Hunt & Co. bid \$4000, and later offered to do the work for 2 per cent. of the cost of the first engine and \$225 for the second engine.



### The Structural Steel Workers' Scale.

The bridge and structural steel workers of the Pittsburgh district have presented their wage scale for the year beginning May 1. It calls for almost 20 per cent. of an advance over the scale granted the men last month. They ask 40 cents an hour for a day of nine hours, or \$3.60 per day, as against the present price of \$3 for a nine-hour day. Until the first of the year the bridge workers of Pittsburgh were receiving 27 cents an hour, and working ten hours. At that time they struck and secured the scale now in effect, after being out three days. The demand at the first of the year, it was explained then, was more in the nature of a test of strength by the Pittsburgh union. It was not indorsed by the international union, and the strike did not have the body's sanction. The scale now presented is authorized by the International Union, and in case of a strike the Pittsburgh workers will have the support of the structural unions throughout the country. New York contractors have already signed a scale for 47 cents an hour for eight hours, and New Jersey unions are asking the same price. The Philadelphia union has demanded 45 cents for an eight-hour day, and Baltimore is asking a few cents more. The Pittsburgh workers say they will have no trouble getting their demands, which they consider very moderate. The new scale also concedes the Pittsburgh contractors one day laborer to handle the structural material to every seven bridge men employed. This has long been a dispute between the Pittsburgh contractors and the men.

### N. & G. Taylor Company's Tin Plate Works.

N. & G. Taylor Company, tin plate manufacturers, has just erected at their tin plate works in Philadelphia a large and commodious machine shop, complete in every way with the most modern machinery, turning lathes, drills, shapers, forges, emery wheels, &c. They have also lately added two tinning stacks, making now 25 in all. They are running to their full capacity and report a most excellent business in all their departments. They have also given out the contract for an additional building for their assorting and warehouse department, which will give them much greater facilities for promptly handling and shipping goods. The recent large additions to their rolling mill at Cumberland, Md., necessitate the above improvements.

**The Frick Office Building.**—As already stated in these columns, the material for the Frick office building, at Pittsburgh, some 5000 tons, will be supplied by the Carnegie Steel Company. The building itself will be erected by the American Bridge Company. The building is to be 19 stories high and will front 216 feet on Grant street and run back 100 feet to Scrip alley. It will extend back from Fifth avenue so as to be on the line of the Court House building. The structure is to have 725 rooms, ten passenger elevators and one freight. Steel, granite, brick and terra cotta, the latter to form fire proof floors, are the principal materials to be used. Work on the new building will commence soon after April 1, when the leases for small buildings now on the site expire.

Prof. J. A. Fleming of London University, during a lecture in London on Tuesday, said that he had Signor Marconi's permission to state that on the first day of the reign of King Edward VII Marconi sent messages by his system of wireless telegraphy from St. Catherine's to the Lizard, a distance of 200 miles, and that since that time he had established perfect communication between these points.

The Berger Bros. Company, tinnery supplies, Philadelphia, Pa., have completed plans for the erection of a five-story warehouse at 100, 102 and 104 Broad street. The structure will be of brick with terra cotta trimmings and will measure 53 x 73 feet. It will be L shaped and adjoin their present Arch street buildings. They will also build a one-story office building, 22 x 28 feet, in the rear of the new building.

### The New Jersey Zinc Company.

Negotiations are now under way looking toward the consolidation of the New Jersey Zinc Company and the General Chemical Company. The matter is now in the hands of two committees, one representing each of the companies interested. These representatives are now endeavoring to formulate a basis on which the union can be effected to the mutual advantage of the stockholders of the two companies. The committee acting for the New Jersey Zinc Company is composed of Stephen S. Palmer, August Heckscher and William P. Hardenbergh. William H. Nichols, Sanford H. Steele and Charles Robinson Smith comprise the committee which is acting for the General Chemical Company.

The plan which has been suggested provides that a corporation be formed which shall acquire and own the capital stock or properties of each of the companies involved. This new or consolidated company is to be capitalized as follows:

Preferred stock, 6 per cent., cumulative.....	\$15,000,000
Common stock.....	24,000,000
Five per cent. 100-year debentures.....	25,000,000
Total.....	\$64,000,000

It is provided that the new company shall annually set aside as a sinking fund a sum equal to 1 per cent. upon all debentures of the series above referred to then outstanding, but not less than \$250,000 per annum, and shall apply the same to the purchase or acquisition of new property or to new construction or improvements, or otherwise to add to the capital or surplus of the corporation, with the option after ten years to apply the same either to the purposes mentioned or to the purchase of debentures. If the debentures cannot be purchased in the market at 105 per cent. or less, the company may, at their option, retire by lot and redeem debentures at 105 per cent. and accrued interest to the amount of funds available in the sinking fund. This series of debentures shall not be increased except to provide for the acquisition and improvement of property.

Of the \$24,000,000 authorized common stock \$8,000,000 is to be issued on the acquisition of property and in part payment thereof as fully paid stock. The remaining \$16,000,000 is to be assessable stock on which 10 per cent. is to be called at the time of issue and made payable at dates to be fixed by the Organizing Committee. The balance is to be payable as called by the board of directors, but not more than 10 per cent. of the par value thereof is to be called in any year unless with the consent of the holders of a majority of the \$16,000,000 of assessable stock.

The distribution of securities is to be as follows:

For the acquisition of the entire stock on properties of the New Jersey Zinc Company, two-thirds in face value of both the debentures and the preferred stock, or \$16,666,666.66 of the debentures and \$10,000,000 of the preferred stock, and three-fourths of the full paid common stock.

For the acquisition of the entire stock or properties of the General Chemical Company, one-third of the face value of the debentures and of the preferred stock, or \$8,333,333.33 in the debentures and \$5,000,000 of the preferred stock, and one-fourth of the full paid common stock.

Of the assessable common stock \$12,000,000 is to be offered to the stockholders of the New Jersey Zinc Company for subscription in proportion to their present holdings. For the stockholders of the General Chemical Company \$4,000,000 of the assessable common stock will be offered for subscription.

The debentures, preferred stock and full paid common stock set aside for the acquisition of the New Jersey Zinc Company is to be distributed equally among the stockholders of the New Jersey Zinc Company, each stockholder taking the same proportion which he would receive if all the stockholders became parties to the agreement. In case any stockholders decline to accept the terms proposed, the securities to which they would be entitled shall be set aside to acquire such property of the company in fee.

The debentures and preferred stock to be set aside for the acquisition of the stock or properties of the General

Chemical Company shall be distributed among the stockholders as follows: The holders of the preferred stock are to receive 100 per cent. in new debentures and 16 2-3 per cent. in preferred stock of the new company. The proportion of the new debentures and preferred stock which nonassenting preferred stockholders of the company could obtain by becoming parties to the agreement are to be issued from time to time upon request of the committee representing the company upon the acquisition of such nonassenting preferred stock or upon the acquisition of the fee of the property of the General Chemical Company. Any securities allotted for acquiring General Chemical Company stock, which may eventually remain unchanged, are to be distributed *pro rata* to stockholders of the common stock of the General Chemical Company who agree to the plan. On this basis each holder is to take such proportion as he would take if all the stockholders became parties to the agreement. Any balance then remaining shall be issued upon acquisition of any nonassessing common stock or the actual property in fee of the company.

The plan provides that the preferred stock is preferred to principal as well as dividends, and is redeemable after ten years at par at the option of the company in amounts of not less than \$1,000,000 at a time.

The plan confirms the payment by the General Chemical Company of their preferred dividend on January 2, 1901, and it is understood that a dividend of 1 per cent. will be paid on March 1, 1901, upon the common stock of that company. It is also understood that a dividend will be paid by the New Jersey Zinc Company of 4 per cent. upon their outstanding stock on or about February 10, 1901. The foregoing dividends are to be paid out of the earnings of the respective companies for the year 1900. With these exceptions the final union of the properties is to be dated from January 1, 1901, provided the two committees are successful in arranging matters within three months.

An organization committee, consisting of the members of the committees representing the two companies and also Edwin S. Marston, president of the Farmers' Loan & Trust Company, are to carry out the provisions of the agreement as soon as both committees have agreed.

The New Jersey Zinc Company were incorporated under the laws of New Jersey in October, 1880, as the New Jersey Zinc & Iron Company. In 1897 the name was changed to the present title and the capital raised from \$3,000,000 to \$10,000,000. The par value is \$100. The company have no bonded debt. The officers are S. S. Palmer, president, and A. P. Cobb, secretary. These, with August Heckscher, C. B. Squier, J. P. Wetherell, S. P. Wetherell, M. T. Pyne, J. P. Riker and D. B. Jones, constitute the board of directors.

The General Chemical Company were organized in 1890 with a capital of \$25,000,000, half of which is preferred and half common. The officers and directors of the company are: President, Wm. H. Nichols; first vice-president, Sanford H. Steele; second vice-president, Chas. Robinson Smith; secretary, J. Herbert Bagg; treasurer, Jas. L. Morgan. Besides these, the directors are: William M. Johnson, H. W. Chappell, Edward H. Rising, Eugene Waugh, H. F. Chappell, George W. Kenyon, Clarence P. Tiers and Robert N. Hall.

## Trade Publications.

**Ice and Refrigerating Machinery.**—The York Mfg. Company of York, Pa., have issued a remarkably handsome catalogue in illustration of their ice making, refrigerating and other machinery. Their standard type of refrigerating machine is what is known as the compression type with single acting vertical compressors driven by a horizontally disposed engine. The design is very simple and at the same time substantial, and the parts are readily accessible for adjustment. The crank shaft is carried by two bearings, the fly wheel being placed between them. The compressor is single acting, the gas entering at the bottom and passing up and through the suction valve in the piston, and being compressed and driven out by the up stroke of the piston

through the discharge valve in the center of the safety head. Since the piston and bottom of the safety head are faced off square a complete discharge of the gas is permitted. The advantage of the safety head is the security it guarantees against the breaking of the head in case of the accidental breaking of the valves, or any other part of the machine, as well as an overcharge of liquid ammonia getting in the compressor, in which case the head lifts and allows the obstruction to pass through or keeps on lifting until the attention of the engineer is called to it and the machine shut down, thereby preventing accident. The engravings show large and small machines of many patterns.

**Electric Traveling Cranes.**—The sixth edition of the catalogue of Pawling & Harnischfeger, Milwaukee, Wis., now being distributed, is a truly artistic publication, comprising 131 large pages of fine half-tones and high class letter press. A view of the works is given in colors, forming the frontispiece. Then come interior views of the shops, followed by photographic reproductions of a great variety of cranes, prominent among them being the huge 150-ton crane recently furnished to the Midvale Steel Company, Philadelphia. The other illustrations cover a wide range of sizes, types and applications, usually showing them as installed in the works for which they were intended. The catalogue is extremely interesting because it gives views of so many important manufacturing plants, if for no other reason.

**Maywood Molding Machines and Sand Rammers.**—A handsomely illustrated catalogue has just been brought out by the Maywood Foundry & Machine Company, Maywood, Ill. The company have greatly increased their line of molding machines, and present illustrations and descriptions of their type B machine, equipped with patterns for split pulley hubs; another illustrating the method of conforming to a curved parting line; a special machine for heavy work up to 7 feet in length; a machine for either round or square work up to 36 inches; a machine for molding gears, having four guides maintaining a perfect alignment; a large machine with patterns for standard M. C. B. car couplers; a machine for railroad draw bar knuckles, and a machine for railroad journal boxes. The pneumatic sand rammer is shown by a variety of applications. The text of the descriptions has been very carefully prepared, and is written in a highly instructive and convincing manner.

**Fire Proof Construction.**—The Renton Fire Proofing Company of Denver, Col., have prepared a full account of their fire proof construction. Except where an arched form is desired this construction consists of cinder concrete with barb wire embedded about ½ inch from the bottom of the slab, the number of strands per lineal foot being proportionate to the span between the beams and the strength desired in the floor. The concrete used by the company is made with the best grades of Portland cement. A test is presented of a slab 4½ inches thick, 40 inches wide, with a clear span of 6 feet carrying a load of 13,000 pounds, or 650 pounds per square foot.

The Cambria Steel Company, at Johnstown, Pa., have commenced to turn out steel cars, and have now on exhibition the first full sized steel car ever built by that concern. It is a standard coke car of 100,000 pounds capacity. The frame work is built on the structural plan, with as few rivets as possible, making it an easy matter to remove any broken part and replace it with another. The Cambria car has the middle hopper and also hoppers at the ends, making it possible to dump a third or a half of a car at one place and the rest elsewhere.

The wage difference between the limestone operators and their employees in the Mahoning and Shenango valleys has been adjusted. The operators withdrew their request for a reduction in wages from 20 cents a ton to 17½ cents, on account of the improved condition of the pig iron trade, due to the Carnegie Steel Company and other purchases, and the fact also that prices of pig iron are considerably higher than when the request for a reduction in limestone quarrying was made.



## QUOTATIONS OF IRON STOCKS DURING THE WEEK ENDING FEBRUARY 13, 1901.

Cap'l Issued.		Thursday.	Friday.	Saturday.	Monday.	Tuesday.	Wednesday.	Sales.
\$29,000,000	Am. Car & Foundry, Common.....	22 22½	22 22½	22 22½	22½ 22½	.....	21½ 22	3,750
29,000,000	Am. Car & Foundry, Pref. (7 % Non-Cu.)	71½ 72	71½ 71½	71½ 71½	71 71½	.....	71½ 71½	2,700
19,000,000	Am. Steel Hoop, Common.....	30½ 33½	31 32½	32 32½	31½ 32½	.....	30 31½	27,100
14,000,000	Am. Steel Hoop, Pref. (7 % Cu.).....	76 78½	76 77½	75½ 78	76½ 77	.....	76 77	4,800
50,000,000	Am. S. & W., Common.....	48½ 53	51 53	52½ 53½	52½ 53½	.....	50½ 53½	309,000
40,000,000	Am. S. & W., Pref. (7 % Cu.).....	93½ 94½	92½ 94	93½ 94	93½ 95	.....	93½ 94	16,700
28,000,000	Am. Tin Plate, Common, N. Y.....	61 65½	61½ 65	64½ 65	64 65½	.....	64½ 66½	94,300
18,325,000	Am. Tin Plate, Pref., N. Y. (7 % Cu.)	90½ 93	91 92	91 92	92½ 93	.....	92½	5,800
7,500,000	Bethlehem Iron.....	60½ 61	60½ 61	.....	61 61½	.....	.....	797
15,000,000	Bethlehem Steel, par \$50, \$1 paid in...	-19	-19	.....	-19	.....	.....	670
7,974,550	Cambria Iron, Philadelphia*.....	-46	-46	.....	-46½	.....	.....	241
16,000,000	Cambria Steel**.....	18 18½	18 18½	-18	18 18½	.....	18½	4,158
11,000,000	Colorado Fuel & Iron.....	46½ 51½	48½ 49	-49	-48½	.....	45 48½	15,200
46,484,300	Federal Steel, Common.....	50 55½	51½ 53½	52 53½	52½ 53½	.....	50 53½	219,200
53,253,500	Federal Steel, Pref. (6 % Non-Cu.)....	78½ 83	80 81½	80½ 81½	81 82	.....	80 82	55,500
32,000,000	National Steel, Common, N. Y.....	45 49½	46½ 47½	46½ 48	47½ 48½	.....	46½ 48½	43,700
27,000,000	National Steel, Pref., N. Y. (7 % Cu.)..	93½ 94½	93 95	94½ 95½	94½ 95½	.....	94½ 96	10,600
40,000,000	National Tube, Common, N. Y.....	67 69½	67½ 69	67½ 68	68 68½	.....	66½ 69	23,350
40,000,000	National Tube, Pref., N. Y. (7 % Cu.)	104½ 104½	-104½	-104½	104½ 104½	.....	104½ 105½	4,610
5,000,000	Penna., Common, Philadelphia.....	.....	.....	.....	66 75	.....	.....	250
1,500,000	Penna., Pref., Philadelphia.....	.....	.....	.....	91 95	.....	.....	30
12,500,000	Pressed Steel, Common.....	37½ 38½	38 38½	38½ 38½	38 38½	.....	37½ 38½	6,000
12,500,000	Pressed Steel, Pref. (7 % Non-Cu.)....	77 77½	76½ 77½	.....	76½ 77	.....	76 76½	1,500
27,191,000	Republic Iron & Steel, Common.....	15½ 17	15½ 16½	16 16½	16½ 16½	.....	16½ 17	13,400
20,306,900	Repub. Iron & Steel, Pref. (7 % Cu.)..	62 64	61½ 62½	-62	62 63	.....	62 64	4,000
7,500,000	Sloss-Sheffield S. & I., Common.....	-21	-22	-22	22	.....	.....	900
6,700,000	Sloss-Sheffield S. & I., Pref. (7 % Non-Cu.)	-20	.....	.....	.....	.....	.....	100
20,000,000	Tennessee Coal & Iron.....	63½ 67½	62½ 64½	64½ 65½	64½ 64½	.....	62½ 64½	37,500
1,500,000	Warwick Iron & Steel (par \$10).....	7½ 7½	7½ 7½	-7½	7½ 7½	.....	-7½	2,190
15,000,000	International Pump, Common.....	28½ 29½	28½ 29½	29 29½	29 29½	.....	29 30	6,200
12,500,000	International Pump, Preferred.....	76½ 76½	-76½	.....	76½	.....	-76½	1,400
11,000,000	International Silver.....	5½ 7½	6½ 7½	-7½	6½ 7	.....	-6½	3,400

\* Par \$50. \*\* \$10.50 per share paid in. † 6% guaranteed by Beth. Steel Co. Late Philadelphia sales by telegraph. ‡ Ex-dividend.

**Bonded Indebtedness:** Am. S. & W., \$130,656; Am. Tin Plate, none; Am. Steel Hoop, none; Cambria Iron Co., \$2,000,000 6% debenture 20-year bonds, 1917, payable option 5 years, assumed by Cambria Steel Co.; Federal Steel Co., \$9,822,000 Illinois 5%, \$7,417,000 E. J. E. R. 5%, \$1,000,000 Johnson 6%, \$6,732,000 D. & I. R. R. 5%, \$1,000,000 2d D. & I. R. R. 6%, \$10,000 land grant D. & I. R. R. 5%; National Steel, \$3,561,000 6%; National Tube, none; Tennessee C. I. & R. R. Co., \$8,367,000 6%, \$1,114,000 7%, \$1,000,000 7% cu. pref.; Pennsylvania Steel, \$1,000,000 5%; Steelton, 1st, 1917, \$2,000,000 5%; Sparrow's Point, 1st, 1922, \$4,000,000, consolidated, both plants; Bethlehem Iron, \$1,351,000 5% maturing 1907. Interest and principal guaranteed by Bethlehem Steel Co. Republic Iron & Steel, none; Warwick Iron & Steel, none; Colorado Fuel & Iron Co.; Col. Fuel Co. Gen. Mort. 6% \$880,000, Col. Coal & Iron Con. Mort. 6% \$2,810,000, Col. Fuel & Iron Gen. Mort. 5% \$2,308,000. Also outstanding \$2,000,000 preferred stock on which dividends have been paid to June 30, 1900. Sloss-Sheffield St. & I. Co., Sloss I. & S. first mortgage 6%, \$2,000,000, Sloss I. & S. general mortgage 4½% \$1,885,000.

## Iron and Industrial Stocks.

The market has been dominated by the great steel deal, which has now entered upon an acute phase. We deal elsewhere with the principal features of the plan, which, so far as each individual concern is affected, has much the character of a fluid pool. The feeling is that in some form or other it will go through, but there has been hesitation among financial institutions, who have been asked to join in the underwriting. It is understood that Mr. Carnegie is to receive to-day about \$20,000,000 in cash. The other interests will merely exchange securities. The general opinion is that the creation of a large bonded indebtedness to pay for Mr. Carnegie's stock at the rate of \$1500 for each \$1000 share does not improve the position of the common stocks of the different consolidations which are to be taken in, but that the preferred issues are aided because the serious danger of trade wars is avoided. Considering the magnitude of the plans under consideration, the fluctuations in prices of stocks have not been great. The heaviest dealings have been in the Wire and Federal issues.

	Bid.	Asked.
American Bicycle Company, common.....	5½	6½
American Bicycle Company, Preferred.....	25	26
American Bicycle Company, bonds.....	75	76
American Bridge Company, common.....	45½	45¾
American Bridge Company, preferred.....	91½	92¼
American Sheet Steel, common.....	24	24
American Sheet Steel, preferred.....	77½	77¾
E. W. Bliss, common.....	125	137½
E. W. Bliss, preferred.....	81	83
Cramp's Shipyard stock.....	27½	28½
Crucible Steel Company, common.....	79	82
Crucible Steel Company, preferred.....	3½	4
Diamond State Steel.....	24½	25½
Dominion Iron & Steel Company.....	6	10
Empire Iron & Steel, common.....	37	42
Empire Iron & Steel, preferred.....	18	21
National Enam. & St., common.....	80	82
National Enam. & St., preferred.....	5	5½
New Haven.....	33½	34
Otis Elevator, common.....	92	93
Otis Elevator, preferred.....	3½	5
Pratt & Whitney, common.....	45	55
Pratt & Whitney, preferred.....	6½	6¾
Tidewater Steel.....	4	5
U. S. Cast Iron Pipe Company, common.....	32	34
U. S. Cast Iron Pipe Company, preferred.....	110	115
U. S. Projectile.....	112	115
H. R. Worthington, preferred.....		

It may be stated that the directors of the Pressed Steel Car Company of Pittsburgh will shortly authorize

an issue of \$5,000,000 worth of 5 per cent. gold bonds. Five hundred thousand dollars' worth of these bonds are to be retired annually. The money received from this issue will provide additional working capital.

The annual meeting of the stockholders of the Standard Seamless Tube Company of Pittsburgh will be held in the Conestoga Building, in that city, on Thursday, February 14.

The stockholders of the Crucible Steel Company of America held a meeting in Jersey City, N. J., on Friday, February 8, to take action on a resolution passed by the Board of Directors amending the articles of incorporation of the company so that they cannot trade their own securities. The amendment was made to overcome an objection of the Listing Committee of the New York Stock Exchange. The securities of the Crucible Steel Company of America will be listed on the New York Stock Exchange in a short time.

## The New York Machinery Market.

Office of *The Iron Age*, 232-238 William street, New York, February 13, 1901.

Reports varying in tone are to be heard in various sections of the machinery trade. Machine tool merchants see a ray of light struggling through the cloud which not long ago seemed to be settling over them. Those dealing in the special types of high class tools, and especially boring and turning mills, declare that they are encountering quite a spurt of good business at present. This class are not complaining about the condition of prices, as their lists remain quite unchanged under all ordinary circumstances, and while the dealers in the ordinary lines were forced to shade prices the builders of special tools were able to maintain values.

The position as to the ordinary type of machine tools is doubtless a little stronger.

A wall of discontent is to be heard from the builders of high speed and the smaller types of engines. Merchants engaged in this class of work state that business is very poor and that those orders that are going through are being taken at unreasonably low prices. In the power transmission and conveying machinery trade a good state of affairs is reported. Numerous

new grain elevators and similar plants afford a good outlet for the conveying machinery and the demand for power transmitting machinery is increasing. Plans are now being drawn for a very large grain elevator which is to be built in this neighborhood in the early spring.

Builders of heavy pumping engines and water works engines are figuring on considerable good work and have a number of large propositions in view which will soon come to the surface. Business in this line has been so good of late that the shops are pretty well filled with work. With the dealers handling the smaller classes of pumps conditions are different. They are still laboring under a scarcity of orders and are naming low prices.

Business for the railroads continues on a large scale. Almost all of the principal roads are buying freely for extensions to their shop systems. In most instances the purchases run up in the direction of large special tools.

At Readville, Mass., the New York, New Haven & Hartford Railroad are erecting a large system of car shops. They are now purchasing the equipment. The machinery throughout will be electrically driven. We are informed that the buildings will be as follows: Paint shop, 225 x 300 feet; erecting shop, 225 x 300 feet; storehouse and offices, 75 x 350 feet; blacksmith shop, 75 x 200 feet; truck shop, 50 x 200 feet; piping, tin and buffing shop, 50 x 200 feet; cabinet shop, 100 x 200 feet; mill, 125 x 350 feet; freight shop, 160 x 350 feet; oil house, 50 x 50 feet; power house, 100 x 150 feet; dry kiln, 75 x 125 feet; hard wood shed, 50 x 300 feet. Several electric traveling cranes will be required. The plans were decided upon by John Henney, superintendent motive power, and W. P. Appleyard, master car builder, in co-operation with C. M. Ingersoll, Jr., chief engineer.

It is reported in the street that plans are being prepared by F. Felkel of Pittsburgh, Pa., for a new plant, which is to be built for the Southern Engine & Boiler works. There will be included in the plant a machine shop, foundry, wood working and pattern shop, boiler house and engine room and blacksmith shop. Alterations will also be made to the boiler shop proper.

Carr Brothers of 61 Broadway, New York, are purchasing considerable material for the improvement and equipment of the Tehuantepec National Railway of Mexico. It is said that they are now preparing for the purchase of a considerable quantity of machine tools to be used in the equipment of the repair and machine shops which are to be built along the route. The structural material for these shops is now being purchased. The firm are acting for S. Pearson & Co., Limited, of London, who have the improvement and equipping of the road in charge. The latter concern have recently entered into a contract with the Mexican Government, becoming lessees of the road for a period of 50 years. This railway, which is about 190 miles in length, crosses Mexico at its narrowest point, connecting Coatzacoalcas on the Mexican Gulf and Salina Cruz on the Pacific Coast. It was originally built by the Mexican Government, but was without terminal facilities for shipping. Harbors are now in course of construction which give anchorage to the largest vessels in the merchant service. The quays and wharves will be fitted up with the most modern machinery and appliances for the loading and discharging of vessels. The railway itself is practically being reconstructed to fit it for heavy traffic. This work is being performed at an outlay of £2,000,000 or £3,000,000, which is provided by the Mexican Government. It is expected that within a few years the Tehuantepec road will be enabled to handle the entire traffic between the two oceans.

Thomas M. Farley, proprietor of the Brooklyn Bedstead & Bedding Company, informs us that he is about to erect a large addition to the Brooklyn plant. The principal building will be six stories in height and will be devoted chiefly to the manufacture of brass bedsteads. The extensions will cost upward of \$100,000. Considerable machinery will be required, and Mr. Farley states that he will soon make the purchases.

It is stated that heavy purchases in machinery and tools are to be made by the Swiss Locomotive Building

& Engineering Company of Winterthur, Switzerland, who have increased their capital from \$720,000 to \$1,040,000. The increased capitalization was effected for the purpose of extending the works.

The Gould Coupler Company of Depew, N. Y., have been shopping about during the week for a good sized list of machine tools.

Another move has been made in connection with the disposition of the Rogers Locomotive Works of Paterson, N. J. Col. William Barbour and John C. Pennington were appointed as receivers to close up the works. They met last week and arranged for the taking of an inventory of the material in the shops, and their reports when completed will be submitted to the appraiser, who will set a figure on the works and they will be formally advertised for sale. Colonel Barbour is a personal friend of Mr. Rogers, and when the latter first announced the closing of the works he tried to get him to sell to some of the Paterson citizens on easy terms.

The American Car & Foundry Company, who are to build a large pressed steel car plant at Detroit, Mich., are not buying the equipment in one large lot, as was expected in the trade. They are buying the tools singly and in small lots. A number of such purchases have already been made from large Liberty street machinery merchants.

We are informed on excellent authority that plans are progressing rapidly for the erection of a great cold storage plant in this city. The plant is to be erected by the City Cold Storage Company, in which W. Fellowes Morgan, George H. Prentiss and J. W. Hinkley are heavily interested. Mr. Morgan is the president of the Brooklyn Bridge Freezing & Cold Storage Company of Franklin square. The new plant is to cover the entire block bounded by West, Hubert, Washington and Laight streets, formerly the site of the Appraiser's Stores Building. The building is to be 14 stories in height. Plans are now being drawn for the building and machinery.

W. L. Bain of Bain & Co., Johannesburg, South Africa, is now in this country purchasing machinery and equipment for a new brewery which is to be built at Johannesburg. He is making his headquarters at the offices of H. Steinmann, 29 Broadway, New York. It is estimated that Mr. Bain will spend \$180,000 while here. The order for the structural steel for the buildings has been given to Milliken Brothers of 11 Broadway.

Thayer & Co. of 39 Cortlandt street were awarded the contract for the 2000 horse-power of water tube boilers to be added to the equipment of the Boston Elevated Railway.

We are informed that L. S. Heald & Son of Barre, Mass., have received a large order from their London representatives, Chas. Churchill & Co., for drill grinders.

A contract for the complete machinery equipment of the Great Eastern Elevator, which is being erected at Buffalo, N. Y., by the American Linseed Company, was awarded to the Webster Mfg. Company of 38 Dey street and Chicago. The elevator is to have a capacity of 2,000,000 bushels. The Webster Company also received a contract for the complete equipment of elevating and conveying machinery required in the new plant of the Northampton Portland Cement Company of Stockertown, Pa.

The Gates Iron Works of 11 Broadway and Chicago received an order from the Phoenix Cement Company of Nazareth, Pa., for an equipment of crushers, a ball mill and tube mill for an extension to their clinker department. The Gates Company also received an order for three tube mills and two ball mills for an extension to the clinker department of the Alabama Portland Cement Company of Duneopolis, Ala.

It is stated that John C. Brain, general manager of the Standard Fertilizer Mfg. Company, is preparing to let contracts for the erection and equipment of a large plant. He is stopping at the Florence Hotel, Birmingham, Ala. The contracts, which are to provide for seven buildings, it is said, will aggregate \$400,000 in value. Half of this is to be spent for buildings and the balance for machinery. There will be two engines, eight boilers, pulverizers for crushing slag, an electric light plant, &c.

The contract for the two 12,000,000-gallon pumping stations which are to be built at Tenth avenue and Harlem River, New York, has been awarded to the International Steam Pump Company. The Henry R. Worthington bid is the one that was accepted. It provided for direct acting pumps and the figure was \$105,000.



## OBITUARY.

JAMES MOORE.

James Moore, for more than half a century proprietor of the Bush Hill Iron Works of Philadelphia, died on February 9, after a brief illness, in his eighty-third year. He was born at Ban Bridge, near Belfast, Ireland. When a lad of eight years his father brought his family to Philadelphia. James' education was obtained in the city schools, and at the age of 16 he was apprenticed to the Norris Locomotive Works, but soon afterward was released to learn the trade of mechanical engineer. After completing his apprenticeship, Mr. Moore was for a time mechanical engineer for a railroad running from Hagerstown to Chambersburg; then for three years with Isaac MacCauley's Bush Hill oil cloth factory, at Eighteenth and Buttonwood streets. He was but 26 years old when he went to I. P. Morris' Iron Works, on the Delaware, and within nine months was made its manager. The possibilities of the iron business induced him to go into business for himself, and in the spring of 1846 he associated himself with three others, under the firm name of Neall, Matthews & Moore, in establishing the Bush Hill Iron Works, at the northwest corner of Eighteenth and Spring Garden streets, occupying two-thirds of the square. The branch of the business looked after especially by Mr. Moore was the contracting for building rolling mills. There were then but few concerns that could do this work, and he put up many of the principal steel and iron mills in the country. Among these were the Pennsylvania, the Bethlehem and part of the Cambria, the Norristown and the Phoenix. The establishment did many other kinds of iron work, not the least important of which was that of building steam boilers. The business passed into the sole control of Mr. Moore in 1870 and he continued it until 1895, when the property was sold to the United States, the new Philadelphia Mint being built on the site.

### NOTES.

JOSIAH M. BACON, a leading coal miner and merchant of Philadelphia, died on February 10 in that city of pneumonia, aged 58 years. He was a director in the Cambria Iron Company, the Southwark Foundry & Machine Company and other industrial enterprises.

O. W. MEYSENBURG, formerly president of the Wells-French Car Company of Chicago, died February 11 at Alma, Cal., aged 52 years. Mr. Meysenburg was born in Germany and at first engaged in the manufacturing business in St. Louis, Mo. In 1886 he removed to Chicago and became a prominent manufacturer in that city, being interested in a number of enterprises.

MICHAEL McCORMICK, a member of the firm of James Lappan & Co., owners of the Iron City Boiler Works, Pittsburgh, Pa., and a prominent member of the business and manufacturing world of that city, died on January 26 after a brief illness from pneumonia, aged 58 years. He was born at Knoxville, Tenn., and went to Pittsburgh in 1870, when he associated himself with James Lappan in the boiler manufacturing business. He was actively engaged in the management of the concern up to the time of his illness.

H. L. BATTIS, senior member of the firm of Battis Brothers, manufacturers of boilers and machinery, at Oshkosh, Wis., died on January 26, at the age of 43 years. Mr. Battis was a prominent citizen of Oshkosh, and had served as president of the City Council for several years.

FREDERICK WILKES, a partner of the firm of Coe & Wilkes, foundrymen and machinists, of Painesville, Ohio, died in Jacksonville, Fla., on January 21. Mr. Wilkes built and operated the first furnace at Lowellville, Ohio.

CHARLES COOPER, a veteran iron manufacturer and the founder of the Cooper-Corliss Engine Works, at Mount Vernon, Ohio, died on February 8, at his home in Mount Vernon, at the advanced age of 92 years. Mr. Cooper built the first locomotive constructed west of the Alleghany Mountains.

CHARLES C. HOWARD, a director of the American Steel & Wire Company, in which he represented the interests

of the New York banking house of Seligman & Co., died February 7 at his home in Plainfield, N. J., aged 60 years.

THOMAS M. COLLINS, for 23 years superintendent of the Cambria Iron Company's blast furnaces, at Johnstown, Pa., died on January 31, after a short illness of the grip. He was born 82 years ago in Berks County, Pa., and went to Johnstown in 1857. Mr. Collins retired from active business about 20 years ago.

ROBERT GILBERT, formerly of Ithaca, N. Y., died on January 28 at his old home in Abergavenny, England. Mr. Gilbert came to this country 19 years ago and settled in Ithaca. In partnership with E. O. Godfrey he conducted a foundry business in that city up to October last, when he retired from business owing to impaired health and returned to England.

## PERSONAL.

Charles J. Sharp, assistant superintendent of the Tennessee Coal, Iron & Railroad Company's furnaces at Bessemer, Ala., has resigned on account of ill health. He has been succeeded by R. D. Curry.

Carroll D. Wright has been reappointed United States Commissioner of Labor by President McKinley.

Harvey Keiner of Wilkes-Barre, Pa., has succeeded W. J. Lloyd as superintendent of the Vulcan Iron Works, at Tamaqua, Pa.

H. C. Brill, superintendent of the bolt and nut department of the American Iron & Steel Mfg. Company, at Lebanon, Pa., has tendered his resignation, to take effect March 1.

Daniel Hughes of Cumberland, Md., has been appointed manager of the open hearth plant of Anderson, Dupuy & Co., of the Crucible Steel Company of America, of Pittsburgh.

P. J. Sweeney of Youngstown, Ohio, has been appointed superintendent of the rolling department of the new plant of the Sharon Steel Hoop Company, at Sharon, Pa. This plant is expected to start about April 1.

Andrew Carnegie has placed \$50,000 at the disposal of the Beaver Falls School Board, Beaver Falls, Pa., for the erection of a library building.

T. Suzuki, superintendent of the collieries of the Imperial Steel Works, at Yawatamura, Japan, and S. Ichikwa, chief electrician of Hokkaido Coal Mining & Railroad Company, with headquarters in Tokio, Japan, were in Pittsburgh last week and visited the Westinghouse Works, at East Pittsburgh, and the Homestead Steel Works. They placed orders for considerable machinery with the Westinghouse Electric & Mfg. Company and Westinghouse Machine Company.

William L. Brown of Pickands, Brown & Co., Chicago, also president of the American Shipbuilding Company, sails from New York on the "Fuerst Bismarck" on Thursday for Italy. He will stay abroad about three months.

Henry C. Frick has bought the Third Presbyterian Church property, on Sixth avenue, Pittsburgh, for \$230,000.

Wm. L. Simonton, formerly district superintendent of the Republic Iron & Steel Company, has been appointed general manager of the Emlyn Iron Works, East Chicago, Ind.

A. E. Borie has been appointed general sales agent of the Bethlehem Steel Company, with headquarters at South Bethlehem, Pa., the appointment dating from February 1, 1901.

Thomas R. Browne, formerly master mechanic of the Juniata shops of the Pennsylvania Railroad, has been appointed works manager of the shops of the Westinghouse Air Brake Company, at Wilmerding, Pa. This is a newly created position.

F. T. F. Lovejoy, formerly secretary of the Carnegie Steel Company, Limited, of Pittsburgh, has had plans drawn for a large residence which he will erect in the East End, Pittsburgh. Alden & Harlow are the architects.

Dr. E. E. Brown of E. E. Brown & Co., Philadelphia, Pa., accompanied by his eldest son, sailed on the "Tartar Prince" for Italy on Tuesday.

# HARDWARE.

It is a significant and interesting fact that the mechanical changes and inventions now going on so ceaselessly around us tend in many directions toward the decreased use of Hardware. The reason is not far to seek, for Hardware is almost entirely a thing of hand use, while the drift of the day is toward the substitution of machinery for hand work. Nor is there in such cases for the Hardware trade that compensation which comes from the substitution of a new thing for an old one, since the new invention often means merely the elimination of some hitherto staple item without anything being offered in its place.

The planing mill, for example, is slowly killing the sale of Fancy Planes, and the net result to the Hardware dealer is the loss of sales of a large and profitable line. Not only in this direction, but in many others is the work of the machine supplanting the work of the carpenter, and with the passing of the carpenter goes the sale of Edge Tools—that bulwark and prop of the Hardware business.

Again, natural processes, such as the destruction of the forests, must sooner or later make a serious difference in the sale of Axes, Adzes, Hatchets, Cross Cut Saws and a legion of other Edge Tools. The settling of the country causes a falling off in the sale of Barb Wire, but a compensation offers itself here in the growing demand for the Woven Wire Fence. The slaughter of fur bearing animals is naturally curtailing the demand for Game Traps, while the introduction of Reaping and Mowing Machines has reduced the Scythe business to very small proportions. We all know what the introduction of Bicycles and electric cars has meant to the business of Horse Furnishings and Trappings, though Hardwaremen still extract some comfort and revenue from the sale of the wheels. Another foe to the horse now looms up in the automobile, and there certainly seems to be but little in them to attract the average Hardware dealer.

The steady substitution of Iron and Steel for wood exercises a most baneful influence upon the Hardware trade, for not only does it cut off the use of Edge Tools, but likewise diminishes largely the need of such fastenings as Nails, Tacks and Screws. Even in little things the same tendency holds good. The invention of patent rubber corks reduces the demand for Corkscrews, while self opening cans make Can Openers unnecessary.

The list could be extended almost indefinitely, but enough has been said to show how general is the tendency and how it deserves attention from those who are watching the tendencies of the trade.

There is, of course, another side to the story. The changes prevail principally in the large cities and they filter but slowly through the smaller towns. Conditions of life and business are much more constant in such places and alter much more slowly than in the large centers of population. Besides, things do not always happen in the dramatic way predicted. Despite many articles on the "passing of the horse" he is still with us, and the business in Horse Trappings is likewise surprisingly good. It is also a curious fact that despite the great increase in machine made Shoes, the trade in Shoe Soles, Shoe Nails and Shoe Lasts continues in large volume, and the goods are used by people who do their own cobbling and mending. This suggests the important fact

that current changes, which militate against the use of certain articles and implements, are bringing in others, perhaps greater in number, which to the enterprising merchant carry even larger opportunities for profitable trade.

February is emphatically the convention month for associations of Hardware merchants. In it occur the annual meetings of the associations of Wisconsin, Kentucky, New England, Iowa, Illinois, Indiana, Missouri, North Dakota, Ohio and Minnesota. The first of these is fully treated in the following pages. To all classes of the trade we commend a careful perusal of the advices thus put before them. The movement is a significant one and of growing scope and influence. It has direct relations to the interests of both manufacturers and jobbers, while to the retail trade it is of especial moment. Every student of trade tendencies can from these reports learn much in regard to the trade questions and tendencies and the attitude especially of the retail merchant in regard to them.

## Condition of Trade.

In general Hardware the number of orders rather than the size is perhaps the most marked feature of the trade at present. That the aggregate is large indicates the activity of business, and the general healthfulness of the commercial situation. The conservatism with which merchants are buying is not on account of apprehension as to the volume of trade which is to be expected during the coming months, for the indications generally point to a steady and liberal demand. There is, however, a feeling abroad in the trade that prices are likely to be gradually shaded in many lines which are still high, so that the movement will for some time be in the direction of slightly lower values. The present condition of the market and the changes which have recently taken place in a good many goods give some ground for this view of the situation. There is, however, little apprehension that there is to be any radical break, but, on the other hand, a confidence that existing values will be on the whole pretty well maintained with slight concessions from time to time, and in this way a gradual approach be made to the level which corresponds with the decline in raw material. This consideration prevents buyers from placing speculative orders which would cover their wants far into the future, and they are content to cover their requirements for only a reasonable time ahead. Orders are, therefore, being placed for such goods as the regular course of business will call for in the near future, in which time it is not anticipated that any material change in values will take place. It is thus a period of frequent rather than large orders. This applies to both the wholesale and retail trade. The manufacturers are practically, without exception, busy, many of them on orders with little opportunity to accumulate stock. Some of them are, however, glad to have a respite from exacting demands that they may have an opportunity to replenish their warehouses and be in a position to fill orders promptly. On their part they are pursuing a policy somewhat analogous to that of the merchants as alluded to above. They are buying raw material in such quantities as their factories require, but are not contracting far in advance of their needs. The Iron situation is watched with solicitude by all classes of trade, as on it so much depends in the matter of prices as well as volume of business. The financial condition gives little ground for complaint. Collections generally are reported good. Prosperity seems to prevail in all direc-



tions. Export business while for special reasons in certain markets showing a slight falling off is making gains in others, and the volume is large and growing. While the further and indefinite increase in the foreign trade in Hardware as well as other American products is not to be accomplished without wise and patient effort on the part of manufacturers, there is no reason to doubt that there will be continued, and perhaps rapid, progress in this direction.

#### Chicago.

(By Telegraph.)

The volume of business in Shelf Hardware is increasing as progress is made toward spring. New stocks are steadily being bought, showing that the Hardware trade is an inviting field for new mercantile ventures. More buyers than usual have been in the city during the week taking advantage of the regular excursion of the Manufacturers' and Merchants' Association. The seasonable weather of the past fortnight is enabling stocks which have been slow of sale to be moved rather easily. The demand for staple goods, which was stimulated by the recent advance in wire products, keeps up steadily, showing that the better movement was not merely a brief spurt. While the demand for goods to sort up is excellent, better movement is reported in orders placed for future delivery. Buyers are becoming more confident of not only good trade in the spring, but of present prices being maintained. Heavy Hardware is in equally good condition with Shelf Hardware. Jobbers report a large volume of business and with all classes of their customers.

#### St. Louis.

(By Telegraph.)

Very good reports are received of the Hardware trade in all sections. Buying is exceedingly active and so far February sales are ahead of last year. The general line of goods that ordinarily moves at this season is being ordered by the trade, and for some articles jobbers find it necessary to place renewal orders. The wholesale trade unite in saying that manufacturers are filled up with work and in consequence are somewhat behind in their shipments. The demand for Bale Ties has commenced and Binder Twine is moving freely. Bolts are active. Tacks and Screws at the low quotations are freely purchased. Southern goods and Carpenter's Tools are being bought earlier on account of the moderate winter. Cross Cut Saws and Axes have had a stimulated demand and the trade is stocking up on steel goods.

### Notes on Prices.

**Wire Nails.**—The advance in the price of Wire Nails has stimulated demand. Orders are now coming in more freely than for some time. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots.....	\$2.30
To jobbers in less than carload lots.....	2.35
To retailers in carload lots.....	2.40
To retailers in less than carload lots.....	2.50

**New York.**—The local demand for Wire Nails shows some improvement. Quotations remain as follows:

To retailers, carloads on dock.....	\$2.53
Small lots at store.....	\$2.55 to 2.60

**Chicago, by Telegraph.**—Manufacturers of Wire Nails report a continued good demand, while jobbers are having a fine trade from stock. Carload lots are quoted at \$2.45 and small lots from stock at \$2.50.

**St. Louis, by Telegraph.**—The retail trade is reported as being generally short on Wire Nails, which are included in nearly every order. The tonnage is showing a handsome aggregate and if anything is on the increase. Jobbers state that mill shipments are at least 30 days in arrears. Price to retailers in carloads is \$2.50, base; for smaller lots, \$2.55, base.

**Pittsburgh.**—The advance of 10 cents a keg made in Wire Nails by the American Steel & Wire Company has had the effect of stimulating demand, which is heavier

now than for some time. Stocks of Wire Nails in hands of jobbers and retailers at the time the advance was made were light, some of the jobbers, however, had placed good sized orders in January for shipment after February 1, when the reduced freight rates went into effect. It is reported on very good authority that the consolidation of Steel interests now under way in New York City may take over the properties of the American Steel & Wire Company. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots.....	\$2.30
To jobbers in less than carload lots.....	2.35
To retailers in carload lots.....	2.40
To retailers in less than carload lots.....	2.50

**Cut Nails.**—The proportionate increase in the demand for Cut Nails is not as great as that for Wire Nails. Requirements are moderate and the new prices are firmly adhered to. Quotations are made at a delivered price based on the Pittsburgh price, plus the sixth-class freight rate, as per "melon-colored book," the purchaser deducting on settlement the actual freight paid. Quotations accordingly are as follows, f.o.b. Pittsburgh, plus freight, terms 60 days, or 2 per cent. off in 10 days:

Carload lots.....	\$2.00
To jobbers in less than carload lots.....	2.05
To retailers in less than carload lots.....	2.15

**New York.**—To jobbers in New York territory Nails in carloads are quoted at a delivered price on a basis of \$2 per keg, f.o.b. Pittsburgh, plus freight as per "melon-colored book," which to this point is 15 cents per 100 pounds, the actual freight paid (which is now 13 cents) to be deducted in settlement. The freight rates to New York territory for carload lots and less than carload lots, per the "melon-colored" rate book, are the same. The actual freight rate on less than carload lots is more than on carload lots, so that after deducting the actual freight from the delivered price of less than carload lots there is but a small net advance, at this point, in the net cost over carload lots. Quotations are as follows:

To jobbers in carload lots on dock.....	\$2.15
To jobbers in less than carload lots on dock.....	2.20
To retailers in less than carload lots on dock.....	2.30

Actual freight on above to be deducted.

Small lots from store.....	\$2.25 to \$2.30
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**Chicago, by Telegraph.**—The demand for Cut Nails is excellent for the season. Jobbers quote carload lots at \$2.25, and small lots from stock at \$2.35.

**St. Louis, by Telegraph.**—No particular activity is spoken of concerning Cut Nails. The demand is holding its own at the new price. Prices range from \$2.35 to \$2.45, base.

**Pittsburgh.**—There is a moderate demand for Cut Nails, and the advanced prices are being firmly held. Stocks of Cut Nails in the hands of jobbers and small dealers at the time the advance was made were light, as buying was mostly in small lots for some time. New prices adopted recently by the Cut Nail Manufacturers' Association are as follows: To jobbers, the prices will be on carload lots \$2 rates, and on less quantities \$2.05 rates, f.o.b. Pittsburgh, plus the sixth-class rates of freight contained in the "melon-colored" rate book, less actual freight rates. To small dealers and consumers \$2.15 rates, f.o.b. Pittsburgh, plus the fifth-class "melon-colored" rates, less the actual current rates; terms 60 days, less 2 per cent. for cash in 10 days.

**Barb Wire.**—The demand for Barb Wire is on the increase, and is in excess of the usual requirements at this season. Quotations for domestic trade are as follows, f.o.b. Pittsburgh, net cash 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots, Painted.....	\$2.60
To jobbers in carload lots, Galvanized.....	2.90
To jobbers in less than carload lots, Painted....	2.65
To jobbers in less than carload lots, Galvanized..	2.95
To retailers in carload lots, Painted.....	2.70
To retailers in carload lots, Galvanized.....	3.00
To retailers in less than carload lots, Painted....	2.80
To retailers in less than carload lots, Galvanized.	3.10

**Chicago, by Telegraph.**—Trade in Barb Wire keeps up very well with both manufacturers and jobbers. Carload lots are quoted at \$2.75 for Painted and \$3.05 for Galvanized, and small lots at \$2.80 and \$3.10, respectively.

**St. Louis, by Telegraph.**—Buying in Barb Wire is very active and as the nearness of spring is bound to bring an increased volume of business it is feared that mills will be further behind. Quotations are as follows: Painted, in carloads to retailers, \$2.80; smaller quantities, \$2.85. Galvanized is 30 cents higher.

**Pittsburgh.**—Demand for Barb Wire has shown material increase since the advance in prices was made and reduced freight rates went into effect. The demand is much heavier than ever before at this season of the year. For domestic trade we quote: Galvanized Barb Wire, \$2.90, in carload lots to jobbers, and Painted, \$2.60. Terms 60 days net, 2 per cent. discount for cash in 10 days, f.o.b. Pittsburgh.

**Plain Wire.**—Improved demand for Plain Wire indicates a large trade in the spring. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. off for cash in 10 days:

	Base sizes.	
	Plain.	Galv.
To jobbers in carload lots.....	\$2.25	\$2.65
To jobbers in less than carload lots.....	2.30	2.70
To retailers in carload lots.....	2.35	2.75
To retailers in less than carload lots.....	2.45	2.85

The above prices are for the base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the advances indicated in the following table:

Plain Fence Wire Advances (Catch Weights).		
Nos.	Base.	Galvanized.
6 to 9.....		\$0.40 extra.
10.....	\$0.05 advance over base.....	.40 "
11.....	.10 " " " ".....	.40 "
12 and 12½.....	.15 " " " ".....	.40 "
13.....	.25 " " " ".....	.40 "
14.....	.35 " " " ".....	.40 "
15.....	.45 " " " ".....	.75 "
16.....	.55 " " " ".....	.75 "
17.....	.70 " " " ".....	1.00 "
18.....	.85 " " " ".....	1.00 "

For even weight bundles, 50 pounds or over, 5 cents per bundle advance on above.

**Chicago, by Telegraph.**—The volume of business in Plain Wire is reported very satisfactory by manufacturers and jobbers. Carload lots of Plain Wire are now quoted at \$2.40, base, and small lots from stock at \$2.45.

**Pittsburgh.**—Demand for Plain Wire is improved and indications are there will be a heavy spring trade. For domestic trade we quote:

	Plain.
To jobbers in carload lots.....	\$2.25
To jobbers in less than carload lots.....	2.30
To retailers in carload lots.....	2.35
To retailers in less than carload lots.....	2.45

Galvanized Wire up to No. 14 is 40 cents advance on Plain; Nos. 15 and 16, 75 cents advance, and Nos. 17 and 18, \$1 advance. Terms are 60 days net, with 2 per cent. off for cash in 10 days, f.o.b. Pittsburgh.

**Snaths and Cradles.**—There has been no change in the price of Snaths and Cradles since last season. The volume of business is reported by the manufacturers as not as great as up to the same date last year. This is in part accounted for by the fact that two years ago the demand was in excess of the supply and as a result orders last season were not only placed quite early, but were unusually liberal. The hay crop was light in some sections last year, resulting in the carrying over by dealers of considerable quantities of goods, and it is quite possible that the aggregate sales of this season will fall somewhat below those of last year. Orders, however, are reported to be coming in satisfactorily and the season promises to be up to the average.

**American Screw Company.**—Under date February 1 the American Screw Company, Providence, R. I., have issued a revised discount sheet, in which they give the new discounts on Wood Screws, which were referred to in our last issue, and also call attention to the change

in discount of Rivets, which are quoted at discount of 75 per cent. In connection with the discount sheet a new edition of their price-list is issued, and also in another pamphlet a convenient and comprehensive telegraphic code.

**American Pattern French Rat and Mouse Traps.**—Detroit Wire & Iron Works, Detroit, Mich., are manufacturing Rat and Mouse Traps of the French pattern, which are quoted by them as follows:

	Per dozen.
No. 1 Detroit Marty pattern.....	\$4.50
In ½-gross lots.....	4.00
No. 2 Detroit Marty pattern.....	3.25
In ½-gross lots.....	3.00
Detroit Marty pattern Mouse.....	2.00
In ½-gross lots.....	1.75

No. 1 Traps are crated one dozen in a crate; No. 2, one-half dozen in a crate. Mouse Traps, one dozen in a package; six dozen in crate.

**Horseshoes.**—A slight change has been made in the price of Horseshoes, modifying the former arrangement by which there was a fixed difference between the base price of carload and less than carload lots. The carload price—namely, \$3.50 on Iron Shoes, and \$3.25 on Steel Shoes, f.o.b. Pittsburgh—is now given on orders of 10 kegs or more, but protection is given to large buyers, as the carload rate of freight is added on carload lots, and the less than carload rate on less than carload lots. Rebates on large quantities are unchanged.

**Augers and Bits.**—Rumors of irregularities in the price of Augers and Bits are current. Some of them may be traced to outside goods, but it is a question whether this entirely accounts for the condition of the market. The manufacturers have been conferring with reference to measures by which the market may be kept regular through some kind of organization or control. Nothing has as yet been accomplished, but it is understood that negotiations are progressing favorably in this direction.

**Chain.**—The Chain market is in excellent condition and prices are firmly maintained, with a slight upward tendency. On Trace Chains, as well as some other lines, the manufacturers are several weeks behind their orders, and there is some difficulty in obtaining goods as promptly as desired.

**Wire Cloth.**—The leading manufacturers of Wire Cloth are holding the goods firmly, and in some cases asking for slightly higher prices, anticipating that with the advance of the season there will be a sufficient demand to exhaust the available supply. The condition of the Wire market is also such as to give increased firmness to manufactured products in this line. The general price from the jobbers to the retail trade is represented by the quotation of \$1 per 100 feet.

**Glass.**—The members of the National Window Glass Association now have their light list printed and sent out to the trade. They are making all quotations from their list dated January 21, the box list of which was given in our issue of January 31. Quotations are as follows:

Less than car lots, 88 per cent. discount.  
Car lots, 90 per cent. discount.  
Three thousand box lots, 90 and 5 per cent. discount.  
The new prices have not stimulated the retail demand, and trade is quiet.

**Paints and Colors.**—**Leads.**—The prices of White Lead in Oil have undergone no change. The market is firm, with about the usual demand at this season, but business is confined, for the most part, to the delivery of old contracts. Grinders are unwilling to make up large quantities of Lead in Oil at the present prices of Linseed Oil. Prices are as follows: In lots of 500 pounds and over, 6½ cents per pound; in lots of less than 500 pounds, 7 cents per pound.

**Oils.**—**Linseed Oil.**—Buyers show little interest in Linseed Oil. The consumptive demand has been smaller since the advent of colder and stormy weather. It is intimated that to induce business some of the independent crushers might have considered a bid at shaded prices for future delivery. The market, as a whole, is dull. City Raw is quoted at 65 to 68 cents in lots of five bar-



rels or more, with an advance of 1 cent per gallon in lots of less than five barrels. State and Western brands of Raw Oil are quoted at about 65 cents per gallon in lots of five barrels or more, with an advance of 1 cent per gallon for less quantity. Boiled Oil is 2 cents per gallon advance.

**Spirits Turpentine.**—The Turpentine market has remained steady but dull. Purchases have been confined to actual requirements, distribution being small lots. Large buyers have been conspicuous by their absence from the market. Prices are as follows: Southern, 40 cents; machine made barrels, 40½ cents per gallon.

## Trade Organizations.

### Indiana Retail Hardware Dealers' Association.

The following circular has been issued by M. L. Corey, Argos, secretary of the Indiana Retail Hardware Dealers' Association, in which reference is made to the coming annual meeting of the association at the Grand Hotel, Indianapolis, and also to the need of organized effort on the part of retail Hardware merchants to combat evils which menace the trade:

We herewith hand you official programme for our meeting February 19 and 20, and if you are not already a member, we ask you to fill out the inclosed blank application and forward at once to the secretary, or, if you prefer, join us at Indianapolis at the meeting.

Whatever may have been your opinion of our association in the past, its work and its objects, you must acknowledge we are rapidly increasing in numbers, influence and experience in handling questions affecting our interests. Over 100 progressive, successful Hardware firms have joined us within the year, many more are writing and will attend the meeting.

Our interests certainly are mutual. Our members are all dealers like yourself. Our association protects, instructs and adds many friends. We discourage a system that makes enemies of competitors, continual cutting of prices as the only means of gaining trade, and low, narrow, unprincipled schemers of business men. We ask you to step with us upon a higher business plane, and aid our association, members and yourself toward mutual commercial advancement.

We need not argue the existence of certain trade evils that have slowly, almost unnoticed, grown upon us. The question is, What ought we to do? We must watch proposed legislation and not be caught napping. We must insist upon laws that benefit the men that pay local and State taxes, employ local help and aid local enterprise and improvement. We must spot the manufacturers who sell specialties to catalogue houses at less than jobbers' prices, enabling them to use as leaders goods that we have pushed, advertised, sold, warranted and established a reputation and demand for. Let us insist as one man upon an equal chance and fair play. We can insist upon the jobber confining sales to legitimate trade and working with us for better trade conditions.

The very existence of our association is in itself a protection for every dealer, and remember this is the only medium, the only plan ever proposed that is practical and guarantees results. Our meetings combine business and pleasant features. You make friends, swap ideas, and good ideas are worth money. This is an age of organized effort. Will you join us?

Buy ticket to Indianapolis, paying full fare. Take a receipt from your local agent for same, this will entitle you to return at one-third fare, provided 100 do this, paying 75 cents or more. Don't fail to take a receipt, because you help your neighbor as well as yourself. Deposit your receipt with secretary as soon as you arrive. Reduced rates at hotel.

The sessions on Tuesday, February 19, will be devoted to routine business, President Weed's address, Secretary-Treasurer Corey's report, reports of various committees, &c. On Wednesday, 20th, a number of addresses will be made. E. W. Clark of E. C. Atkins & Co., Indianapolis, will address the meeting on the subject of "The Allied Interests of Manufacturers and Dealers;" W. P. Lewis, New Albany, on "Our Association," and J. A. Shidler, South Bend, on "The Catalogue House Question." G. W. Landon of Kokomo will also make an address.

Among the important questions which will be discussed on the closing day are:

Could Our Association Add Fire Insurance to Advantage?

How May We Be Certain That All Goods Sold on Credit Are Charged?

Should Our Executive Committee Hold Regular Meetings?

In addition a good deal of time will be devoted to discussion of matters brought up through the Question Box.

### Ohio Hardware Association.

Geo. M. Gray, Coshocton, corresponding secretary of the Ohio Hardware Association, is about sending out the following circular letter to the members of the organization:

As promised in my letter to you under date of January 21, I herewith inclose programme of the next meeting of the Ohio Hardware Association, to be held in Cincinnati, February 26, 27 and 28.

We trust that you have not only made arrangements to attend this meeting yourself, but that you will also persuade your competitor to come with you. We are glad to note the increasing efficiency of our organization. At the close of the session in 1895 we had but 16 members. We now have more than 400 members, and this growth has been marked by a development of interest and of earnestness on the part of the officers and members that makes this association one of the strongest retail Hardware organizations in the Union.

We have 1375 retail Hardwaremen in the State, and it goes without saying that we should have 1000 members in our association, and, to accomplish this end, each individual should make a personal effort to bring into the association those dealers living in his vicinity. We therefore trust that you will join us in the good work. Come to Cincinnati. We know you will never regret the trip.

The people in Cincinnati have arranged to do much for us, and we promise that you will receive benefit enough to more than offset the expense and loss of time. If there is anything in which we can be of service to you, be good enough to call upon us.

The convention will be held at the Auditorium, Seventh and Elm streets, Cincinnati, and will be called to order at 2 p. m. on Tuesday, February 26. In the evening the delegates will be entertained at a vaudeville performance and Bohemian smoker at Scottish Rite Cathedral.

At the Wednesday morning session, after reports from the corresponding and financial secretaries, B. W. Ricketts of Coshocton will read a paper on the "Rights of the Retailer." At the afternoon session papers will be read by Lewis E. Keller of Cincinnati on the "Ohio Hardwareman," and by C. C. Fouts of Middletown on "Advertising a Hardware Store." The Committee on Affiliation with the Interstate Retail Hardware Dealers' Association will also make its report. Wednesday evening will be devoted to the annual banquet, which will be given at the Armory.

On the closing day of the convention the contents of the Question Box will be considered, in connection with other routine business.

### Louisville Retail Hardware and Stove Dealers' Association.

The Louisville Retail Hardware and Stove Dealers Association held their first annual meeting on Friday, February 8. The membership of this association, we are advised, comprises nearly all the prominent Hardware and stove merchants of Louisville. The organization report good progress in the work they have undertaken, and are well pleased with the results thus far. The following officers were elected: Joseph Knapp, Knapp & Co., president; Frank Geher of Geher & Son, first vice-president; William Hinkle, second vice-president; Samuel B. Korb, Korb Hardware Company, secretary, and Joseph Kirchdorfer, treasurer.

A change in the affairs of the Owosso Hardware Company, Owosso, Mich., has lately taken place, and new officers elected, as follows: Geo. W. Detweiler, president; F. W. Pearce, secretary and manager, and W. W. Palmer, treasurer. The company are putting in a new plate glass front, and are making a general renovation of the establishment.

## Pacific Coast Business Conditions.

**W**ILLIAM H. COLE of the firm of Tower & Lyon, 95 Chambers street, New York, who left here December 26 on a business trip to the Pacific Coast, has recently returned and was very favorably impressed with business conditions in that section of the country. He was accompanied by Warren Tower, the son of his partner, who is still in Southern California. It was their intention to see some of the scenery in the canons of Colorado, but on account of the snow they continued their trip by way of the Santa Fé line.

### San Diego.

Their first business stop was San Diego, Cal. This town, in the extreme southern part of California, he describes as one of great possibilities, owing to its splendid harbor and other features, but what is much needed now is more railroad competition to modify rates, &c. The town largely lives on its own inhabitants, there being some trade along the railroad running down from Los Angeles, the nearest large town, about 126 miles north. They have some shipping and the United States Government have a naval station there. The principal Hardware houses are the Hawley Hardware Company, who both wholesale and retail, and McKinzie, Flint & Winsby, who are wholesalers only.

### Los Angeles.

Los Angeles Mr. Cole refers to as a beautiful city with clean streets, the stores being well kept and neat, with attractive show windows. There is every inducement for people to go there and make it a home. It has a splendid climate, and it is said there were 35,000 tourists in the city at one time last winter. What is going to stimulate business there very largely, in Mr. Cole's opinion, is the discovery of petroleum comparatively recently. He says that oil wells and derricks will be found in the yards of fine residences, the revenue from this product being of more importance than the house itself. The Southern Pacific Railroad Company are said to have made a contract for 2,500,000 barrels of crude oil for fuel from this source of supply, to be used in their locomotives, &c. They have been, and are, altering many locomotives to burn this fuel on a large part of their line. Moreover, this fuel will stimulate manufacturing very largely in that section of the country, as it will furnish what has heretofore been lacking—i. e., fuel, which, in the form of coal, is now brought for heating and other purposes from Australia and Oriental countries. Manufacturing has already begun in a small experimental way, he having noticed some small factories and mills; also a beginning in the way of mattress manufacturing with the prospect of a new concern for making Hardware Specialties. The principal Hardware concerns in Los Angeles are the Union Hardware & Metal Company, Hoffman Hardware Company, California Hardware Company and Harper & Reynolds Company, the first three doing a strictly wholesale business with no retail department.

### San Francisco.

Mr. Cole's next stop was at San Francisco. There he found Miller, Sloss & Scott just moving into what he regards as one of the finest buildings for Hardware purposes he has ever seen. Its construction is such that there is not a dark place in the building. The interior trim, shelving, &c., is of beautiful knotless Oregon pine. It is electrically lighted and well equipped with elevator and telephone service. The building is of stone and steel construction, five stories and basement, practically the only wood work being the necessary shelving. The building is so arranged that in case of fire each floor can be quickly deluged with water and which will then find outlet through the elevator shafts. Each department has its own headquarters, and each head of department his own private office.

In San Francisco it was the general testimony of the representative business people that everybody is busy, with a bright outlook for the future. Alaskan business does not help San Francisco so much as it does the Northwest, but one element of prosperity for this city

has been the fact that it was a point of departure for troops and supplies for the Government operations in the Philippines and China. Mr. Cole was there immediately after the inventory and it was his understanding that the retailers are perfectly satisfied with existing business conditions. The principal wholesale Hardware houses are Miller, Sloss & Scott, Dunham, Carrigan & Hayden Company and Baker & Hamilton.

### Sacramento.

Mr. Cole's next stopping place was Sacramento. The business of this city has come to be largely dependent on its own inhabitants and some of its suburban towns, the Hardware houses there not sending their traveling representatives as far into the surrounding territory as is done by San Francisco concerns. The principal houses there are Schaw, Ingram, Batcher & Co., Baker & Hamilton, and Thompson-Diggs Company.

### Portland.

Continuing his trip northward, he next visited Portland. Portland has in the Portland House, in his opinion, the best hotel for traveling men that he knows of. A special effort is made to contribute to the comfort of all their guests. They have just completed a fine large writing room for travelers, which is exquisitely lighted and handsomely furnished, with plenty of writing materials, &c. One feature of the room is a frieze several feet in depth on which the history of the western country is handsomely shown in relief work. The principal Hardware houses there are Honeyman, De Hart & Co. and Corbett, Falling, Robertson & Co. Business in Portland was exceptionally good last year. The possibilities of the future are very bright and the business men there are encouraged to look forward to the coming year as a very prosperous one.

### Tacoma.

After leaving Portland he journeyed north to Tacoma, which has had a setback ever since the panic of 1893, when their boom collapsed. There has been little encouragement since until now. They formerly had no harbor to speak of and the railroad has taken very little interest in the town. Now, by dredging, their harbor facilities have been very largely increased so as to accommodate large ships. Docking facilities have been increased to an enormous extent and the Northern Pacific Railroad Company have built a number of large warehouses there. Tacoma is a grain and Lumber shipping point, their product going principally to the Continent of Europe and the Far East. The various improvements and betterments referred to give hope and confidence to the business portion of the community and make them disposed to do business. The principal house there is the Hunt & Mottet Company, who both wholesale and retail.

The first of the year Henry Mohr, a successful Hardwareman in Tacoma for a number of years, purchased the interest of the Washington Hardware Company at that place. The business will be continued and incorporated into a company under the above name. The old establishment will also be continued as Henry Mohr. Mr. Mohr is an aggressive, enterprising, pushing Hardwareman and will make a success of it if any one can is the belief of Mr. Cole.

### Seattle.

Next in order was Seattle, Wash. In this city he says there is an opportunity for a first-class hotel man who will offer a home to the traveling public. He says there was not a vacant house to be had in the town and in consequence there must necessarily be a great deal of building during the coming season. He was impressed with the fact that everybody was busy in the stores, and, in fact, there appeared to be no idle people in the place. The two representative Hardware houses are Schwabacher Hardware Company and Seattle Hardware Company, who, from the way they have been driven with trade the past year, consider it annoying to take an inventory, as it interferes so much with a profitable business. From Mr. Cole's observation, if there is any city on the coast he has visited that has a bright prospect for



a prosperous future, not of a boom character, that place is Seattle. It is an important shipping point and the Northern Pacific Railroad Company are putting up great storage warehouses. Seattle is located on Puget Sound, which is a beautiful body of water and most accessible to Alaska territory. Their principal shipments abroad are lumber, grain and some ores.

#### Vancouver.

From there he went to Vancouver, B. C., which is the terminal of the Canadian Pacific Railroad, and also the home port of the Empress Steamship Line to Australia. The Canadians do not seem to have the same aggressiveness and enterprise that he found across the border. The principal wholesale Hardware houses there are Thomas Dunn & Co. and McLennan, McFeeley & Co., who both wholesale and retail.

#### Victoria.

From Vancouver he went to Victoria on the Island of Vancouver. The main houses in Victoria are E. G. Prior & Co. and Walter S. Fraser Company.

#### Spokane.

His next objective was Spokane, Wash., on the Northern Pacific Railroad. This city has a good many suburban towns which they supply, and there is a growing trade. They have a good deal of territory that they can and do cover as far south as Salt Lake, and also get into Oregon and Montana. The leading houses in Spokane are Holley, Mason, Marks & Co. and Jensen-King-Byrd Company. Going east he stopped at Helena, Mont. The principal house there is A. M. Holter Hardware Company.

#### Butte.

Butte, in the same State, is a lively business town. There were plenty of people on the streets all the time, day and night, their dependence being mainly on mining. As the mines are run 24 hours a day with three shifts of men, there were always plenty of people about. One thing he noticed, there was an absence of any vegetation in the town, on account of the sulphurous and other fumes from smelting. From Butte Mr. Cole came directly to New York.

### Requests for Catalogues, Quotations, &c.

*The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

**H**IGBIE & ROBBINS, dealers in general merchandise, Babylon, N. Y., advise us that they are increasing their stocks of Builders' Hardware, House Furnishing Goods and Agricultural Implements, and are desirous of receiving catalogues, &c., pertaining to these lines.

Shipley Hardware Company, Meyersdale, Pa., request catalogues, quotations, &c., on general Hardware and Farming Implements.

### The Pittsburgh Shovel Company.

**W**E may state that Goff, Horner & Co., Iron and Steel factors, Lewis Block, Pittsburgh, with some associates, have bought the old West Penn Steel Works property, formerly operated by Jennings, Beale & Co., at West Leechburg, Pa., on the West Penn Railroad, about 40 miles from Pittsburgh, and will equip the buildings with the necessary machinery for the manufacture of a full line of Shovels. Part of the equipment has already been ordered and work will be pushed as fast as possible, and the concern expect to be in the market with a full line of Shovels about July 1.

**THE HUMPHRIES MFG. COMPANY**, Iron and Brass Pumps, Plumbers' Supplies, &c., Mansfield, Ohio, in order to be in better position to serve their jobbing and export trade, have opened an office in New York City at 81 and 83 Fulton street.

## Hardware in the Philippines.

FROM OUR SPECIAL CORRESPONDENT.

### FIRST ARTICLE.

**W**ITH several millions of people as purchasers, the Philippines have been without Hardware stores for nearly 200 years. The reason for such a state of affairs was that a very large proportion of these people had no use for Hardware of any description. With the populating of the islands with about half a million foreigners, many of whom had come from countries where modern utensils and improved appliances were used, there arose a demand for Hardware goods on a large scale.

#### A Market for a Liberal Variety of Articles.

The demand was further increased when 70,000 American soldiers and as many American civilians for department and general commercial work arrived here and were distributed among the natives. Hardware stores have been springing up in various cities and towns at the rate of one a week, according to statistics furnished by the internal revenue tax collectors of the archipelago. Where there were formerly 1,000,000 people on an island on which not a Hardware store could be found, there are at the present time from one to five Hardware stores, and all of them are doing a very flourishing business. There is vast room for more of the stores, and they should carry some of the goods most needed by what is practically a new country.

Although populated for 300 years or more, the Philippines have managed to exist without the needed supplies of Hardware, Metals and Tools. The only dealers in Hardware were a limited number of agencies in Manila and Iloilo, where they carried other lines of goods. No one seemed to care for modern Tools, and even the carpenters, machinists and general workmen had no use for Tools of any sort. They relied upon using hand made devices, sticks of wood shaped to a certain pattern, or other crude implements belonging to past ages.

#### Past and Present Compared.

Your correspondent saw many Tools formed from stone when he first arrived here about a year ago. These Tools seem to bear the mark of long service, probably more than 100 years. The housewives managed to get along with the crudest types of stone and wood utensils. It is pleasing to relate, however, that there have been some remarkable alterations in the condition of the people during the past 18 months, with the result that the carpenters and the machinists, the housewives and the sons on the farms, all require the newer types of Tools and utensils, which at the present time are presented for sale in the stores of the leading cities and towns.

The natives having once become accustomed to the advantage of the modern devices are not satisfied until they possess them. I have seen families of natives part with their cattle for some simple piece of cooking utensil worth only a few cents, while the animal may be worth \$10 in gold. That is one trouble in the islands. The tools and utensils being quite new to the majority of the people, they have no idea of the market value. Therefore dishonest peddlers of Hardware often present for sale a Lock, a cheap Tool, a Tin Dish or the like and assert that the value is a great many times more than the real worth. Usually the price is readily obtained. I have known of many cases in Mindanao in the gold mining districts where cheap Tinware has been sold for very nearly its weight in the precious metals. The natives may possess a supply of gold or silver, which they have secured from the rich surface deposits in the hills, but they have none of the modern Cooking Utensils or Farming or Machinists' Tools.

#### Stone Cutting Tools Wanted.

Not only the natives are in need of Stone Cutting Tools, but there is a great demand for them from the United States authorities, who are reconstructing the bridges and grading the roads throughout the islands. There has been established in the islands a system of

Internal revenue collections, each office of the district being under the charge of a captain or lieutenant of the army. These officers have several assistants for collecting revenues, and considerable money is derived for use in road construction. This money is also available for purchasing the necessary Tools. There is an abundance of funds at hand for the buying of Tools for cutting stone, but Stone Cutting Tools seem to be a kind which the dealers forgot to provide for. The writer called at the leading stores of several cities and was unable to procure any Stone Cutting Tools of any sort, except some Hand Forged Tools made by local iron workers.

It was stated at each store that they could get high prices for such Tools if they had them. The United States Government has taken steps to procure Stone Cutting Tools and Tools for general road and bridge work from America, but for many years to come the request for this line of Tools will be exceedingly large, owing to the volume of work which is to be done by the town authorities, mining and railroad corporations and private persons.

#### **Sudden Call for Locks.**

Of the four or five millions of wooden houses and Nipa shacks in the Philippines, it is safe to assume that fully 80 per cent. have never been provided with Locks for the windows or doors, for the reason that there were no Locks to be obtained and because the average house contained nothing worth stealing. But there have been changes wrought by the Americans that call for Locks and Keys for the doors and windows of homes. Houses which formerly held nothing worth carrying away are now fitted with certain little valuables, as the owners of the homes have been employed on road or other work by the Government and earned the first money of their lives, and have, therefore, been able to make purchases of articles of value. The result is that a demand for Locks and Keys has sprung up.

The old Spanish Locks which some of the stores carried were soon sold at greatly advanced prices, and orders have been given for a few hundred thousands of Locks for the doors and windows of native homes. American Locks are preferred, I am told. Judging from the samples of Locks from other countries which I saw, I do not wonder that the Filipinos want American made Locks. The Locks which were in stock were heavy, crude in design, rusty, evidently shipped here to get rid of, and in many cases refused to work, some part being broken, defective or even missing. I saw many Locks with wrong Keys and some with no Keys at all.

#### **Importance of Wire.**

Ordinary Wire, of iron, steel, brass, copper and other metals, in various sizes, is in very great request in all parts of the islands. The Chinese stores are about the only ones that seem to have a supply of the Wire, and they are so careful of it that they keep you waiting for a long time while they measure it out with a piece of rule about eight inches long. They will not give you one inch over the measurement. They never have enough, and the only way to do is to buy up what they have in two or three different stores. The finer grades of Wire are mostly wanted, and the carriage makers, the machinists and the house builders purchase large quantities of it, for they are great fellows to use fine copper, brass and iron Wire for binding parts. If the natives want any of the heavier grades of iron Wire they go to the telegraph lines in the jungle and cut out a mile or so. There is a death penalty for doing this, but they usually get a roll of the Wire from the poles without being caught. They also take the tinned telephone Wire by the yard, and cause much trouble to the soldiers.

#### **Iron Rods.**

There is a call for rod iron here that will last for some years, as the bridge builders and the builders of the large houses are using it to a large extent, much faster than the stores are able to furnish, so that some of this iron is procured from other sources. The bridge builders are calling for much of it in the work connected with the arches of the bridges, while the builders of the

large houses use it to brace the building against earthquake, for in the Philippines there are from three to four heavy earthquakes each year. Your correspondent has experienced six earthquakes, and it would seem as if the buildings would be shaken to pieces. In the bamboo shacks the earthquake fails to do much damage, owing to the elasticity, but in the wooden houses the rods are needed to brace the timbers.

#### **Tool Steel.**

There should be some tool steel shipped to the islands, for there is much need of it in the making of certain descriptions of tools for the wood workers, machinists and miners. The miners are constantly calling for special tools in order to work the metal bearing sections, and are unable to secure the same owing to the lack of tool steel. I have seen high prices offered for little pieces of tool steel, and refused. One must canvass the stores thoroughly and be prepared to pay exorbitant values, if he is to get any of the valuable tool steel in these islands.

#### **Sheet Brass, Copper and Zinc.**

Anything that is finished in sheet brass becomes very valuable to the natives. Therefore the carpenters and the carriage makers, the manufacturers of weapons, and many others, use the brass for finishing wherever possible. One can enter the hall of a house and observe that the ornamental work is liberally decorated by means of brass. A stair rail will be wound snake like with strips of brass. Brass pieces will entwine spirally about the posts, presenting an odd appearance. These decorations will be highly polished and they look neat and well. The result of this mode of decoration in the halls and rooms of houses of the well to do people of the islands is a lively demand for sheet brass. There is very seldom much of the brass available and the writer has been trying for several weeks to secure enough to have some bands put about a scabbard of a large bolo knife presented by a former tribe chief. If any one manages to purchase any sheet brass he pays for it about eight times the cost in America.

Sheet copper and other metals are in good demand also. Zinc is much wanted.

#### **Husking Machinery.**

If some of your readers who handle husking machines could be here and note the crude, slow and imperfect methods employed by the natives for husking corn, they would at once send a lot of husking machines to the islands and receive for them very liberal values. The corn of the Philippines is of good grade and grows in abundance, but it is spoiled in removing from the husk. The natives either remove it by using the hands and fingers only, or they use a sort of a wood and stone device which they have patterned and employed for many years. This type of machine used by them bruises the corn. Corn thus prepared sells at a lower price than the hand husked corn. There is a market here for the corn huskers, and some should be sent to the Hardware stores of the islands.

#### **How to Reach the Stores.**

A very good way to reach the stores of any locality in the islands is to correspond with the collectors of internal revenue. These officers are located in all large cities and towns and the barrios are included in their districts. Every storekeeper is obliged to register his name, store location, business, &c., on the office books, and is taxed for Hardware at the rate of from \$10 to \$30 gold per year, according to whether he is doing business in a third-class, second-class or first-class city. Therefore to get into correspondence with these Hardware stores, American dealers need but write to the internal revenue officers.

In an advertisement in this issue a four-story brick factory building, situated at Nyack, N. Y., is offered for sale or lease. Reference is made to the size of the plant, equipment, &c., as well as the fact that it is ready for immediate operation. Particulars may be obtained by addressing H. S. Edgerly, Nyack, N. Y.



## Trade Items.

KELLY AXE MFG. COMPANY, Alexandria, Ind., advise us that their Axe and Scythe factories are rapidly approaching completion, and they expect to have them in operation by March 1. They have made certain material extensions and improvements in the plant, which has caused a slight delay in its completion.

E. M. RICHARDSON, Waltham, Mass., recently celebrated the thirtieth anniversary of his entry into the Hardware business as a proprietor. Mr. Richardson, with his brother, began in 1871 under the style of Richardson Bros., which style continued until 1875, when, his brother retiring, Mr. Richardson associated himself with J. Bond, under the firm name of Richardson & Bond. The latter retired about 20 years ago, since which time Mr. Richardson has continued under his own name. Mr. Richardson does an extensive retail business in Hardware, Paints, Oils, Varnishes, Doors, &c., and has also manufactured the Waltham Blind Fasteners for many years.

FRANK S. BARNETT, formerly salesman for Wilmington Malleable Iron Company, Wilmington, Del., has relinquished that position to enter the Automobile business in Jersey City, N. J.

## Price-Lists, Circulars, &amp;c.

STURGES, CORNISH & BURN COMPANY, Harrison, Green and Peoria streets, Chicago: Illustrated circulars of a variety of products. One circular refers to Milk Cans, showing several patterns, together with goods used in handling and measuring milk. Another circular treats of related articles, including the Sturges Steel Churn. The third gives the special features of an extra heavy Dairy Pail, made of XXXX charcoal tin with drawn steel bottom.

KNAPP & SPENCER COMPANY, Sioux City, Iowa: Catalogue devoted to their line of Bicycles and Sundries for the season of 1901.

AMERICAN SCREW COMPANY, Providence, R. I.: Illustrated descriptive catalogue of their regular products, such as Screws, Stove, Sink and Tire Bolts, Taps, Rivets, Burrs, Tapped Nuts, Wire Nails, &c. With it is also issued a pamphlet of similar size giving a special telegraph code prepared with regard to their own products only, which are not satisfactorily covered by general codes now in use.

SAWYER TOOL COMPANY, Fitchburg, Mass.: Catalogue D of Fine Tools and Hardware Specialties, including large lines of Hardened Steel Rules, Gauges, Straight Edges, Squares, Protractors, Micrometers, Calipers, Dividers, Sets, Trammels, &c.

THE IOWA FARMING TOOL COMPANY, Fort Madison, Iowa: Illustrated folder of Tools for the flower and vegetable garden, including Garden Cultivators and Tool Sets, Hoes, &c.

A. GEISEL MFG. COMPANY, St. Louis, Mo.: Illustrated 16-page booklet, of Ideal Ovens and Trimmings for Gasoline, Oil and Gas Stoves, including half round and triple Tin and Enameled Saucepans, Ovens, &c.

C. R. ZACHARIAS, Asbury Park, N. J.: Illustrated circular of the Zacharias Lawn Mower Grinders.

McKENNA BROS. BRASS COMPANY, Pittsburgh, Pa.: Illustrated descriptive booklet of Brass Faucets for the wine and liquor trade.

MASSEY VISE COMPANY, 30-32 South Canal street, Chicago, Ill.: Illustrated catalogue describing their various styles and sizes of Vises for mechanics' use.

JOSEPH DIXON CRUCIBLE COMPANY, Jersey City, N. J. and 68 Reade street, New York: Descriptive folder of Dixon's Silica-Graphite Paint for steel smoke stacks, boiler fronts, heated surfaces, &c.

RUSSELL & ERWIN MFG. COMPANY, New Britain, Conn. and 43-47 Chambers street, New York: An illustrated booklet of Cut Glass Knobs in round, ball and octagon types, together with plate and drop escutcheons suitable for use in connection with this form of high grade Builders' Hardware.

THE CLARK MFG. COMPANY, Buffalo, N. Y.: Illustrated catalogue of Blind Hinges, Butts, &c.

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## What to Do in February.

BY AJAX.

**F**OR the actual exchange of merchandise February is a poor month, but a month rich in opportunities.

### A TIME FOR EVERYTHING.

Though shorter by two days than some, we yet have more time in February than in most months. Time for attending our Board of Trade meetings, there coming in contact with business men in other lines and learning of them; time to attend our own trade associations, there to discuss affairs of direct personal interest; time to overhaul our store machinery, oiling and preparing for the early spring business; time to look over the scrap book of ideas culled from our trade journals, and put in practice those that seem applicable to our needs.

### EVERY TUB ON ITS OWN BOTTOM.

Looking over the shelving we find a break that has been an eyesore. One of the boys with saw and hammer is taken from his regular work and made to become "store" carpenter, his labor resulting in an attractive and convenient wash day display where Tubs, Wringers, Wash Boilers, Clothes Line and Pins are brought together. The maiden effort being successful, one end of the shelving base is lengthened and a rack or bin made for holding Pastry and Meat Boards, Chair Seats and Trays. With a bit of molding this addition compared favorably with the rest of the shelving, especially after a liberal application of the jack-of-all-trades' friends—Putty and Paint.

### ON TENTER HOOKS.

Hooks are put in the ceiling, from which are suspended Curtain Poles, and on these are hung many articles that appear to poor advantage or none at all when laid flat, as Mirrors, Razor Strops, Gas Tubing, Wire Baskets, with Gas Mantles, Lunch Baskets, Skates, Toy Brooms and Whisks.

### TO KEEP DOWN THE DUST.

Through our trade journals we learned of Floor Oil for keeping down dust. We tried it and found it a good thing, but did not like pushing it along at the rate of 50 cents a gallon. So in February we have time to experiment. To 3 quarts of the cheapest carbon oil we add 1 quart of Linseed Oil and have a Floor Oil of our own that is excellent. The first application was made with Whitewash Brushes and was hard work. Now we apply with a rag held flat in a mop stick, renewing about once a month, in the evening, and the slight odor from the carbon oil is gone by next morning.

### A TIME SAVER.

In the busy times we took notice of the time lost by the clerks going to the wrapping counter with small articles, as Tacks, Casters, Screw Eyes, Bolts, Can Openers and the thousand and one articles of the like. In February we have time to remedy this by placing Manila envelopes, 5 x 7 inches, conveniently, bearing our advertisement on the outside, and on the inside a slip inserted relating to Potato Mashers, Meat Cutters and other goods.

### TRADE LITERATURE.

In February we have time to investigate trade literature. Not alone that relating exclusively to Hardware, but that of other businesses. A neighbor in the grocery trade picked up a copy of *The Iron Age* from the desk, requesting permission to take it home to read. In reply to the surprised question put to him he said he read all the trade journals he could get hold of; that the principles of all businesses were the same, the details only differing, and many a good idea he got through other channels than his own trade. Believing the result might be the same if applied at home, we collected some trade literature other than our own and—angels and ministers of grace defend us!—from a catalogue house—true it was from a wholesale firm—were obtained many dollar making ideas and, be it confessed, inspiration.

The body of the catalogue, issued monthly, was devoted to department store goods and many pages to Hardware, even Lock Sets, all illustrated and priced in plain figures. The cover was given over to Help and Hints for the Merchant. Under the caption "FEBRUARY

DUTY" were many pithy paragraphs, such as the following:

We are advocates of the strenuous life. The good things of this world of trade are for the merchant who hustles. He who does not hustle neither gets nor deserves success.

It may be taken for granted that less business will be done in your town in February than in April or November. The question is, Who shall get the lion's share of what trade there is?

You either lose or gain in February. If you let up and your rival pushes, you lose. If you push and he does not, you gain.

EXTRAVAGANT ECONOMY.—No insurance; a bad location, even though the rent is low; a poor quality of twine or wrapping paper; cutting down the advertisement space; a cheap stock; taking the ½ cent in change; refusing to give down weight.

Now comes a direct drive at the Hardwaremen. It is suggested that February is a

### GOOD MONTH FOR SPECIAL SALES,

two or three times a week, and that the goods that are best suited for the purpose would not be staples, but low priced practical articles of universal use in the household. As suitable lines they suggest the following: Hardware, Tinware, Enameled Ware, Wire Goods, Wooden Ware, Brushes, Baskets, Notions, &c. No elaborate machinery, they say, is required to conduct sales of this sort, as a central counter and a show window are all the accommodations required.

### NOT A BAD MONTH, AFTER ALL.

Now for February in earnest. It is, after all, a pretty good month and is, like the world, not half as bad as the people in it. To be up and doing for all there is in it in the spring, we must plan now.

### HAVE A PLAN.

The general who can only fight has little chance against the foe who marks out his campaign in advance and fights by method, not by chance. You can make no better use of the relatively quiet month of February than to lay plans for the busier months to come. You can devote an amount of time and thought to the matter now that would be impossible in the hurly burly of the busier season after March 1.

## The Western Malleable & Grey Iron Mfg. Company.

**T**HE WESTERN MALLEABLE & GREY IRON MFG. COMPANY, 145 Burrell street, Milwaukee, Wis., who recently removed to that city from Port Washington, Wis., have greatly enlarged their manufacturing facilities, now occupying more than double their former floor space. Their shipping facilities are also very much better than at their old location, and they are in closer touch with the trade. The company make a specialty of Office Chair Irons, of which they now claim to be the largest manufacturers in the world, holding numerous patents covering desirable features. They are the originators of adjustable and locking devices on Chair Irons. They also carry a large stock of Pump Spouts, Stool Rings, Truck Casters, Truck Wheels and Axles, Settee Legs and Arms, as well as other Cast Iron Goods. Their facilities are such that they are well prepared to make all kinds of castings up to 2000 pounds. They use the best grades of soft, strong iron. All castings are tested daily and they are guaranteed to be soft, strong and true to pattern.

TUTTLE & BAILEY MFG. COMPANY, 83 Beekman street, New York, state that the fire which visited their factory in Brooklyn last month was only a small affair, and was confined to their japannery, which being a brick building, suffered little damage except the roof and some stock in course of japanning. The company were delayed only one week while repairs were being made, and have been enabled to go right on with their business ever since.



## British Letter.

FROM OUR SPECIAL CORRESPONDENT.

I WOULD like to caution optimistic American exporters against pleasing letters, which doubtless they are receiving from assumed firms over here with high sounding titles. One firm with a title that would put the Standard Oil Trust to the blush, with an alleged office in the best part of the city, is especially in my mind. On going there I did not find the name on the notice board of offices, and on going to the top of the building to inquire of the housekeeper, was told that if there were any letters or communications she would deliver them. There are plenty of substantial firms who can do the American trade; there are also a number of reputable travelers and commission agents who are worth cultivating; but above all things avoid highfalutin trade titles. They are a snare to the unwary.

### Depressed Business.

The wholesale and retail Hardware trade during the past month or two has fallen on evil times. The depression has come so quickly that we do not quite know where we are. The continuance of war in South Africa has made business men anxious and cautious, and there is not much buying or selling.

### Some American Hits.

Firms like Markt & Co., John G. Rollins & Co., John G. Rollins & Sons, J. A. Nones, Alfred Field & Co., John Shaw & Sons, and others have all been doing well recently with their trade in American goods. The South British Trading Company, who confine themselves to American goods, have been selling the Globe Air Rifles and the Peach Oil Heaters readily, while their general line of American goods, such as the Griffin Shelf Brackets, the Sterling Hacksaw Frames, Adjustable S Wrench, Bardsley Oil Door Check and Spring, Hammers, Hatchets and Harness Hooks, are all finding appreciation over here. Another American line which just now is selling uncommonly well is Oil Heaters, particularly the Barler line, which is sold by the British & Foreign Du Bois Company. J. L. Sardy, who is just now on your side of the Atlantic, is doing well with the automatic Blue Flame Cabinet Oil Stoves, which he has in great variety, all neatly shown and natively made, and bearing comparison in appearance with anything which the English makers are at the present moment putting on the market. If I might venture a hint to American makers of Oil Stoves it would be that they should be made more durable and packed much more strongly.

### Sample Exports.

As illustrating how the export trade of British Hardware is carried on, the following figures show what passed through the Manchester ship canal during three days last week. As the destination of the goods is mentioned in many cases, American Hardware exporters can ascertain what chance they have of competing: 1056 boxes of Tin Plates, 345 packages of Iron Bedsteads and Mattresses, 21 cwt. of Galvanized Iron Sheets, 22 cwt. of Iron Rivets, 7 tons 7 cwt. of Iron Bolts and Nuts, 1 ton of Iron Hinges, 10 cwt. of Iron Chain, 3¼ cwt. of Iron Castings, 8½ cwt. of Steel Anvils, 11 cwt. of Iron Washers, 7½ cwt. of Steel Bars, 17 coils of Wire Rope and 27 packages of Hardware to Alexandria (Egypt); 2 tons 2 cwt. of Iron Sheets, 10 tons 9 cwt. of Rod Iron and 1 package of Cutlery to Bagdad (Asiatic Turkey); 45 packages of Tin Plates, 20 barrels of Tin Bars and 16 packages of Hardware to Beyrout (Syria); 130 packages of Copper Sheets, 65 cases of Yellow Metal Sheathing and 1 Steel Safe to Bushire (Persia); 30 tons 12½ cwt. of Hoop Iron and 16 packages of Iron Buckets to Bussorah (Asiatic Turkey); 11 tons of Scrap Tin to Germany (via Rotterdam), 10 tons 10 cwt. of Hoop Iron and 2 coils of Wire Rope to Holland; 3½ tons of Bar Iron, 157 packages of Iron Bedsteads, 33 packages of Iron Baths, 24 packages of Iron Buckets and 1 case of Screws to Malta; 6 tons 4 cwt. of Iron Tubes and 1 ton 7 cwt. of Bar Steel to Mersyna (Asia Minor); 25 boxes of Tin Plates to Susa (Piedmont, Italy); 125 bundles of Iron

Wire and 27 cwt. of Iron Castings to Treport (France), and 8 packages of Copper Sheets to Tripoli (Syria).

### Hardware and Cutlery in the Caucasus.

A gentleman who has been traveling in the Caucasus in the interest of British trade writes of his experience, pointing out how many openings there are for British Hardware and Cutlery. As the remarks are equally to the point so far as American Hardware is concerned, I venture to reproduce them for the benefit of your manufacturing and exporting readers:

"I have just returned from a journey to Batoum (Asiatic Russia), Tiflis (Russian Transcaucasia), Erivan (Russia), and in the spring I was in Central Asia, at Samarkand, Tashkent, Merv, Askabad, &c. I noticed at all these places poor but cheap Solingen (Germany) Cutlery commanded the market. It is got up to look tolerably like Sheffield work, but it is of very indifferent quality. I bought some to test it. Now, surely, if the Germans can get their goods into the Central Asian market we can. And the way is via Odessa (Russia). In the Caucasus and Crimea I found the same poor Solingen stuff. Why not English? Now, my point is that if a room were hired at Odessa for exhibits and sale of British Cutlery and Hardware, in common by several firms, the Russians would have an opportunity of seeing and testing these goods. From Odessa the knowledge would quickly spread to the Caucasus, and perhaps further across the Caspian. At Rostov-on-the-Don, owing to the energy of their agent, Ransomes & Sims and other British firms have placed large numbers of machines (agriculture) all over the Don Province. I know the American Government is doing all it can to arrange next year, if possible, an exhibition of American goods, Engines, Cutlery, Machinery, Lathes, &c., in Moscow, to oust the British stuff. If possible, from the market in South Russia. What the buying public want in the Caucasus are Needles, Scissors, good Gun Barrels—cheap, not ornamented. In Erivan I saw Liège Gun Barrels, Blades, Knives and Swords they manufactured themselves. Cheap Table Cutlery and Garden Knives would find a market—*secatours* also."

### Inferior Castings.

I was in the office of an American importer last week when a builders' ironmonger came in with a broken casting of an American Door Spring. Apologies were instantly tendered and an offer made to replace the Spring at the earliest. This meant five weeks. Being left alone for a moment with the ironmonger I asked him what he was doing with American goods. He told me he was buying quite a number of American lines because they were cheap, but he added that he was continually put to great inconvenience on account of faulty workmanship, particularly in the way of castings, both large and small. He said he liked American goods, but he was getting tired of these continual breakages. He added that formerly American packing was excellent, but the packing he had recently received showed a bad falling off. When the ironmonger had gone, my friend showed me several similar cases and compared them with competing goods from the English Midlands. The Midland goods were more expensive, were much more substantial, and on the whole were holding their own. But where price was a consideration the American article was favored. Both merchant and consumer were agreed that the fault lay in the casting work, the other parts being quite good enough.

### Electrical Fans.

I have three or four times urged the possibilities of a good trade in this country in American Electric Fans for shops, warehouses and offices. There is a direct representative of one of the large American Fan makers located in London and I find he is doing an encouraging business. A few weeks ago I met the representative of another American Fan company who were looking for a suitable agent. Arrangements have been made with one of the best agents in London and samples are coming over. The British agent has also arranged with his American principals that a skilled working foreman shall be sent over at the cost of the American house. It

is too early as yet to say how this will develop, but the incident lends color to what I have previously written. As electric power is now becoming cheaper and cheaper, and as the Americans have perfected this class of goods, I see no reason why a big trade should not be done.

#### Germany vs. America.

Speaking of Germany reminds me that the Germans are much concerned about their trade in Australia. It is alleged that the colony of New South Wales is now flooded with American goods and that the gain of American business has been mainly at the expense of the German trade. Color is lent to this theory by the following statement of Australian imports from Germany and the United States during the four years, 1896 to 1899, inclusive:

	Germany.	United States.
1896.....	\$1,350,000	\$8,415,000
1897.....	4,380,000	9,135,000
1898.....	3,755,000	7,665,000
1899.....	4,165,000	10,800,000

#### Chicago Cash Register Company.

**A**MONG the comparatively new but enterprising companies of Chicago are the Chicago Cash Register Company, manufacturers of cash registers, whose main office is in the Marquette Building, Chicago. The company were organized last May, with a capital of \$500,000. Stock to the value of \$250,000 was sold immediately, and in December the company had a paid up capital of \$500,000. The factory is at Grand Crossing, Chicago, in the building formerly occupied by the Wilson Sewing Machine Company. It is a five-story structure and has a capacity to employ 1100 men. The plant is composed of a pattern room, a machine shop, polishing and buffing department, plating department, and a large warehouse. The company have equipped the plant with the latest machinery, and the output will soon be 35 machines per day. The magnitude of the cash register business can be seen from the fact that although of recent origin, there are three companies, with a total capitalization of \$6,500,000, making them, and the orders from different parts of the world show that the demand is practically unlimited. Robert L. Henry, formerly president of the Champion Iron & Steel Company, Muskegon, Mich., and Chas. B. Shedd, a former director of the same company, are acting in the same capacity with the new firm, and the other officers and directors are H. P. Kauffer, first vice-president; Horace B. Peck, second vice-president; Thos. P. Hamm, secretary and treasurer; Luke Cooney, Jr., general manager, and Lawrence Cooney, assistant manager. The directors are Horace B. Peck, H. P. Kauffer, Frank B. Lay, Luke Cooney, Thos. P. Hamm, Chas. B. Shedd and Robert L. Henry. The company have just issued a fine catalogue setting forth the advantages and merits of their machines. A special feature of these Registers is the adding mechanism, which the company claim can never make a mistake. The action is all positive, and it is stated that the machine cannot be beaten by the operator.

#### An Ancient Wooden Lock.

**C**HAS. N. SIMMS of Simms & Co., Ronceverte, W. Va., has sent a sketch of a wooden granary Lock which was sold for 25 cents at the sale of the effects of a farmer who died near that place, aged 85 years. The Lock was made by his father some years before the deceased was born. It was made of hickory, 1½ inches thick, and was chiseled out so that the inside or under part of the Lock fitted flush against the door. The Lock is 4½ x 6½ inches in size, contains three tumblers, has a wooden Bolt, and is operated by a wooden Key. The only metal about the Lock is the four Wrought Iron Spikes which held it on the door. It had been in constant use and is practically as good as ever. Mr. Simms has sent the Lock to the West Virginia Historical Society at Charleston.

Pearce & Huntley, Penn Yan, N. Y., have disposed of their branch store at Branchport to Ed. C. Brown.

#### Screen Doors.

**S**CREEN DOORS may be properly classed among the awkward squad of goods handled by Hardware merchants, as being difficult to sample and store. The Springfield Hardware Company of Springfield, Ohio, have solved the problem in the manner shown in the accompanying illustrations. As in Fig. 1, doors used for samples in the salesroom are hinged together, say half a

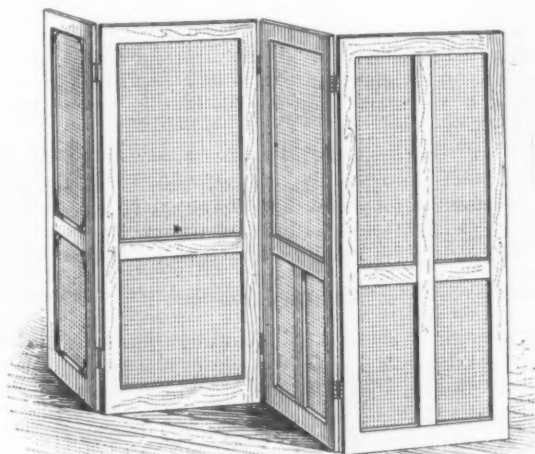


Fig. 1.—Sample Screen Doors.

dozen different styles, which allows all to be opened out, without handling or falling, and permits of quick selection by customers. A card is fastened on the back of each style of door, upon which is noted the stock on hand, the prices, sizes carried, and where the surplus stock is stored. In Fig. 2 is shown the manner of storing, the Doors being placed in compact racks against the wall. The edge of each Door only shows, with the size plainly marked on it. This arrangement, it is remarked, takes time at the beginning of the season, but

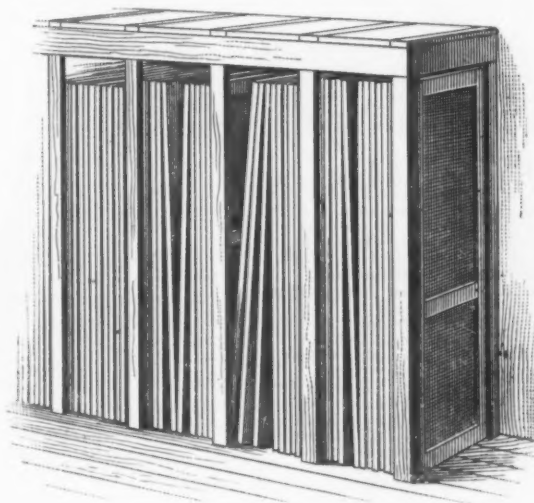


Fig. 2.—Stock of Screen Doors.

it saves much labor later on. This arrangement of keeping stock has been found very satisfactory and extremely economical of space.

James B. Clow & Sons, Chicago, manufacturers and jobbers of plumbers' supplies, have sent a circular to the trade announcing that the company have installed a very fine radiator plant in their works at Newcomers-town, Ohio. The radiators are of attractive and artistic design, and will be called the Columbia. The company also announces that the old Walcott-Webster plant recently acquired by them will be equipped with additional machinery and will be opened under the management of William M. Webster, president of the former company.



## Fifth Annual Meeting of the Wisconsin Retail Hardware Association.

THE Wisconsin Retail Hardware Association held their fifth annual meeting at Milwaukee on the 6th and 7th inst. The headquarters of the association, as heretofore, were established at the Republican House, and this year the members were agreeably surprised to find that the proprietors of the hotel had built an extension containing a commodious room sufficient for the purposes of the meeting. This dispensed with the necessity of a long walk to an outside hall, as had previously been the practice.

The opening session of the convention was called to order at 2 o'clock on Wednesday afternoon. The officers of the association were present, with the exception of Treasurer H. F. Schlegelmilch of Eau Claire, who sent a letter regretting his inability to attend on this occasion.

### Members Present.

The register showed that the following members were present, but it is known that quite a number failed to register their names, which will account for their omission from this list:

C. A. Peck, Berlin.  
John Hessel, Antigo.  
A. H. Sheldon, Janesville.  
John Drogkamp Company, Milwaukee.  
Chas. Bucht, Waupun.  
L. M. Nash, Grand Rapids.  
Torgeson Bros., Stoughton.  
Anderson & Liebe, Stoughton.  
O. A. La Budde, Elkhart.  
A. D. Race, De Pere.  
Fflugradt Bros., Milwaukee.  
John F. Wegner, Fond du Lac.  
O. J. Williams, Cambria.  
H. Winter, Clintonville.  
J. H. Wasley, Sauk City.  
Wm. Noll, Marshfield.  
Fred. Hoernel, Racine.  
F. E. McGraw, Peshtigo.  
W. R. Hay, Sturgeon Bay.  
Caspar Bagley, Cambridge.  
E. H. Daniels & Co., Milwaukee.  
H. H. Marvin, Oregon.  
S. F. Menzel, Oshkosh.  
F. J. McPherson, Oshkosh.  
John Hamilton, Westfield.  
E. C. Williams, Waupaca.  
A. W. Puchner, Edgar.  
Andrew Puchner, Wittenberg.  
F. M. Montgomery, Merrill.  
F. Uecke, Milwaukee.  
Geo. Ewen, Antigo.  
Stallenberk Bros., Milwaukee.  
Wenzel & Duteau, Merrill.  
W. N. Shandren, Kenosha.  
Roach Bros., Fennimore.  
O. P. Schlafer, Appleton.  
Geo. P. Dana, Fond du Lac.  
C. F. Peiper, Columbus.  
J. F. Hamerstein, Sheboygan.  
Herman Dieterich, Milwaukee.  
Gross & Jacobs, Stevens Point.  
C. B. Wagner, Burlington.  
Geo. A. Spiegelberg, Brownsville.  
Dehne Bros., Neosho.  
H. W. Timmer, Waldo.  
J. B. Wensink, Plymouth.  
Gesckermann Bros., Milwaukee.  
Wm. Wedde, Campbellsport.  
John H. Haensgen, Fond du Lac.  
L. B. Ruka, Boscobel.  
R. H. Suettinger, Two Rivers.  
Frank J. Kerscher, Manitowoc.  
Siefert Bros., Reedsburg.  
Andrew Noll, Chilton.  
A. G. Kroncke, Madison.  
J. L. Roblee, Fond du Lac.  
Christ & Busby, Arcadia.  
M. Broderick, Brodhead.  
Thomas & Cunningham, Berlin.  
Louis Weiss, Milwaukee.  
H. M. Krogmann, Milwaukee.  
Robert Reinhold, Milwaukee.  
Chas. Kroesting, Chilton.  
Geo. W. Buelow, Waupun.  
F. W. Ellenburg, Reedsburg.  
Esser & Schmidt, Hartford.  
Chas. F. Riehl, Milwaukee.  
E. H. Ramm, New London.  
C. A. Haertel, Waukesha.  
J. Kornelly, Milwaukee.  
Henry Vetter, Milwaukee.  
Aug. Thielke, Mayville.  
C. W. Lehmann, Cedarburg.  
Emil Tietgen, Manitowoc.  
Anderson & Fritz, Racine.  
D. G. James, Richland Center.  
A. A. Jacobs, Delavan.  
G. G. Pratsch, De Pere.  
C. M. Zweck, Milwaukee.  
Rudolph D. Busse, Milwaukee.  
J. A. Hughes, New Richmond.  
Gust. Mueller, Columbus.  
Byron E. Walter, South Milwaukee.  
Thos. Madden, Pardeeville.  
C. F. Hanson, Markesan.

H. H. Miller, Sheboygan.  
H. J. Weyer, Darien.  
August Schupinsky, Milwaukee.  
Geo. Gookin, Genoa Junction.  
J. A. Wilkie, Fond du Lac.  
G. P. Pilschke, Milro.  
F. W. Matthaeus, New Holstein.  
Peter Paulus, Milwaukee.  
D. B. Johns, Spring Valley.  
H. S. Crane, Milne.  
C. A. Gordon, Waukesha.  
H. J. Kohthipp, Unity.  
G. A. Metcalf, Janesville.  
Fred. Merhadt, South Kaukauna.  
A. G. Werd, Manitowoc.  
J. Scherffen, Oconomowoc.  
Robert Rose, Bondnel.  
Thomas Barry, Arcadia.  
Lawrence Clancey, East Troy.  
H. M. Krogmann, Milwaukee.  
O. A. La Budde, Elkhart Lake.  
John R. Jenkin, Mineral Point.  
W. F. Frenzlow, Johnson's Creek.  
Ralph M. Burtis, Oshkosh.  
F. A. Kellman, Galesville.  
J. Wallschlaeger & Sons, Manitowoc.  
Mohr & Jones Hardware Company, Racine.  
J. W. Hall, Whitewater.  
Andrew Lewis, Monroe.  
J. B. Pierce, Monticello.  
W. Rathesack, Manitowoc.  
H. Lorieburg, Oconomowoc.  
F. Gassmann, Milwaukee.  
L. Gotfredson, Green Bay.  
L. Friedelsen, Green Bay.  
C. B. Root, Omro.  
E. C. Hager, Jefferson.  
S. Junkin, Mineral Point.  
R. W. Schilling, New Holstein.  
Wm. Pritchard, Randolph.  
Rudolph Greve, Kiel.

### President Sheldon's Address.

President A. H. Sheldon of Janesville read his address, as follows:

In greeting you to-day, the fifth anniversary of our association, it is well for us to review for a moment the past as well as to look forward to the future.

One year ago we were on a very uncertain base of operation. Prices for goods in our line were at their extreme limit in height, and no one bought more than to supply his daily needs and each one was anxious as to what the future would bring us. This continued until the Gates manipulation of stock occurred and then the \$1 drop in Nails came, and following this all Steel and Iron products in sympathy fell to nearly old prices. The year 1900 was noted for a falling market, as was the year 1899 a rising one. But we are to-day on a much safer basis than one year ago and the prospects brighter by far.

The high prices of 1899 deterred the majority from carrying out their plans for building, and in many locations scarcely any new buildings were constructed, but gradually since the decline we begin to see a change and I prophesy that 1901 will show us a "hammer" for trade. The past year has also been a Presidential year, which always more or less interferes with regular trade, but that is now over and we can rejoice that we shall have rest from politics for another four years, and know pretty surely what a dollar is worth.

During the year 1900 we lost by death and non-payment of dues 45 members and added 60, leaving a net gain of 17, which will make us a membership of about 300 paid up members.

We have lost by death our faithful and efficient treasurer, H. J. Steinbach of Rice Lake, E. Sanborn of Fox Lake and Mr. Fredericks of Beloit, and D. J. Thomas of Berlin. I would recommend that suitable resolutions be presented and placed on file and a copy of same be sent to friends of deceased.

The Executive Committee have done their work well and have ever been ready to do all they could for the good of the association. Your secretary, of course, has been the main spoke in the wheel—in fact, nearly the whole wheel; I cannot say too much for his indefatigable energy in keeping in line the whole work, for the year has, in many respects, been one of disappointments and failures over which we had no control. His report will show that financially we are in first-class shape; also, he will explain what was done at the Inter-State Association meeting and the results.

L. P. Ashley, Pardeeville.  
John C. Schweers, Showano.  
F. H. Day, Omro.  
F. G. Schultz, Milwaukee.  
C. F. Thalheim, Wausau.  
H. A. Schmitz, Manitowoc.  
Smith Bros., Wauwatosa.  
Aug. Kase, Milwaukee.  
John Hughes, Fond du Lac.  
J. Dexter, South Wayne.

We have had some matters to adjust during the year, and the entire board have done all in their power to remedy existing evils; but I am afraid they were not fully backed up by the association as they should have been, therefore if they have not fully succeeded do not blame them. I do not expect we will be able to correct all abuses at once, but I know we are on the right road and unity of action will certainly accomplish what we are working for.

Some matters of importance will come up for discussion during our sessions, and I earnestly hope each one will express his mind freely on every subject. They are the following:

Why not unite the office of secretary and treasurer in one and require bonds?

Shall we urge a closer regard for our rules and also a closer study of the Pink List?

Shall we exempt department stores from being objectionable and ask jobbers to refrain from selling only consumers and catalogue houses, as Minnesota has done?

Shall we affiliate with any other associations?

Among other changes in constitution which will be brought up, is one to have at least two members of the Executive Committee hold over, and on this change we are prepared to take action at this meeting.

Now, as we are about to commence the work of this session let us unitedly resolve that the plans decided on be carried out faithfully by every member and that the association be placed on a sounder basis than ever before, and the result of such action will help to remedy many of the evils that constantly annoy us and cut off our profits.

#### Question Box.

The secretary stated that a box would be placed in position to receive questions from the members during the session, which would afterward furnish a great many interesting topics for discussion.

#### Committees.

The president made the following appointments of committees:

TRANSPORTATION: C. A. Peck, Berlin.

RESOLUTIONS: L. Flindelsen, Green Bay; O. P. Schlafer, Appleton.

GRIEVANCES: John Hughes, Fond du Lac; D. G. James, Richland Center.

RECEPTION: Jacob Kornelly, Milwaukee; Robert H. Suettinger, Two Rivers; W. N. Shandren, Kenosha.

LEGISLATION: Jno. Summers, D. G. James, Richland Center.

AUDITING: F. J. McPherson of Oshkosh, Mr. English of Baraboo.

#### Communications and Invitations.

Communications were read from Mayor David S. Rose of Milwaukee and the Citizens' Business League, inviting the association to meet in Milwaukee again next year. Announcement was also made that the local jobbers and manufacturers had provided entertainment for the members in the shape of tickets for theatrical performances on both Wednesday and Thursday evenings. A letter was read from the Chicago Hardware Dealers' Association stating that a committee had been appointed to attend the annual meeting of the Wisconsin Association, both for the purpose of receiving such information as might be useful to them and of participating in the discussion of the department store and catalogue house question.

An invitation was read from the National Enameling & Stamping Company to visit their works in Milwaukee on Friday morning and was accepted with thanks.

#### Report of Secretary Peck.

The secretary read his annual report, as follows:

In presenting my fourth annual report I am glad that I can come before you while the prospects of the association are so bright.

We number to-day 300 who have paid all their dues up to date. The past year has been the busiest one for the secretary of all that have preceded it, but as long as the membership manifest as much interest in the association as they do, it seems as though we could afford to bestow the necessary time and money to build

up and improve it in its workings and thus make it a greater power for good.

The almost uniform courtesy that I have received from the membership as well as from jobbers and manufacturers is a source of great congratulation on my part, and I think is fully appreciated by me. I have been roasted once or twice to the "queen's taste," but my hide is thick and I have apparently come through the year in fairly good shape.

#### INTERSTATE ASSOCIATION.

Early in March I went to Fond du Lac to consult in regard to the new association about to be launched in Chicago, and on the 12th of March met in Chicago representatives from several Northwestern States, where, after two days' discussion, the Inter-State Association was formed, but it was evident to some who were present that several of the States represented at that meeting had not as yet sufficiently perfected their State associations to move forward at once along the lines that had been pursued by the old Northwestern Association, but hoping that soon all conflicting interests could be harmonized, officers were elected and the formation completed. It seemed as though almost the first thing to be done was to issue a Pink List, which the



JOHN HESSEL, President.

membership could at once utilize, but the fact that such a list to be available in the Inter-State must contain reports which the Northwestern was not particularly interested in, like Louisville, Kansas City, St. Louis, Detroit, Indianapolis, Cincinnati, &c., confronted us, which, together with the fact that the president early in the summer lost his entire establishment by fire, so delayed this work that in July, after a full consideration of the matter by our Executive Committee, it was decided that our best interests lay along the line of independent action, and we paid our proportion of dues up to date and withdrew. So far as I know that action has not been regretted. We then bought a supply of Pink Lists recently issued in Minnesota, so changed as to be applicable to Wisconsin, and this explanation will in some degree explain the tardiness in getting out those lists that were so earnestly called for during the early summer by our membership.

The matter of joint action with other States, either by the formation of a Northwestern association or by reuniting with the Inter-State, will no doubt come up for settlement at the present session.

#### DELINQUENTS.

During the early summer I spent considerable time dunning delinquents, as I firmly believed that any member who allowed his dues to lapse did not have interest enough in the association to receive any benefit himself or be of any benefit to the association. In August the Executive Committee authorized me to make draft on all delinquents and to drop from the rolls a score or so, but their places were more than filled by new members, so that to-day we feel that we are proud of a membership that have faith in our work and are willing to work for its success.



## COMPLAINTS.

There have been a great many more complaints during the year than in all previous years combined, but I wish to thank every one against whom complaints have been lodged for the very fair way in which I have been met, with only a single exception, in which case all efforts to adjust matters were useless.

August 23 the Executive Committee met pursuant to call at Fond du Lac and took action on all matters



O. P. SCHLAFERT, Vice President.

necessary, and that has been the only meeting of the committee since the last annual until to-day.

January 10 I mailed 701 copies of our present programme to the trade of the State. The patronage of the advertisers therein has enabled us to realize a handsome profit from the same and added materially to our cash balance.

## PRIZES TO TRAVELING SALESMEN.

The Executive Committee offered a series of prizes to the traveling salesmen who should secure the greatest number of members, as they were strongly impressed with the idea that the matter needed only presentation to a great many dealers to enlist them with us and they knew of no way to reach them so cheaply as this. It has not resulted as successfully as some of us expected, but this has added several new names.

## CLERICAL WORK.

My clerical work for the year consisted in part of mailing 358 duns, 650 copies of proceedings which were donated by *The Iron Age*, 957 circulars, 284 appeals for membership, 283 Pink Lists, 125 jobbers and manufacturers for advertisements, 701 programmes of this meeting, and some 300 (more or less) miscellaneous letters, besides receipts for dues received, making a total postage bill of some \$40, besides the postage on 1901 programmes, which is a separate item.

I think four of our members have been removed by death during the year and it may be more, but if so it has escaped my notice. Our treasurer, H. J. Steinbach, died in July after a long, painful illness; E. Sanborn, who was in business at Fox Lake, September 8; Mr. Fredericks, of the Fredericks Hardware Company of Beloit, and D. J. Thomas of Berlin, September 12.

I have noticed that two of our members have suffered by fire: J. S. Druse of Milwaukee and Sherwood Brothers of Spring Green.

Burglars counted at least three of our members worthy of their attention: C. A. Dewey of Kenosha, Sumner & Morris of Madison and S. E. McDowell of Pewaukee. I presume these statistics are not complete, but they are those that I have noticed.

I received a complaint from one dealer who complained of a firm listed as unfavorable, and could of course do nothing for him. I could not help but notice, too, in one complaint sent me embodied in an advertisement printed in a local paper, that in looking the paper through I did not find an advertisement of any kind from the complainant, which of course was a help to the success of the fair store.

The loyalty with which the officary of the association has supported my every effort has been duly appreciated by me and has done much to lighten the labors of the office.

## Treasurer's Report.

The secretary read the report of the treasurer, showing a balance of \$769.98 on hand. Included in this amount is the profit on the souvenir programme prepared by the secretary, amounting to some \$290.

## Thomas McCracken's Remarks.

The president introduced Thos. McCracken of Minneapolis, secretary of the Minnesota Retail Hardware Association, who addressed the convention as follows:

I am glad to meet with the Wisconsin Association, and I am glad to see that you interest yourself to come to your annual meeting. I think if there is any place a member should go it is to the annual meetings. There are questions of all kinds come up that you cannot understand from a reading of the report. The Question Box is undeniably one of the finest features of your association. If there is anything that has troubled you in your business regarding your association or regarding department stores or catalogue houses, or any one of the thousand and one things that trouble you during the year put it down in the form of a question, and put it in the Question Box. That will come up to-morrow morning.

Our association up in Minnesota has the same features that you have here. We have had considerable trouble the last year with department stores, and while Minnesota has always been very radical and among the first to go on record against the department stores and catalogue houses—I guess her constitution and by-laws are the most radical of any association ever formed—at the commencement of this year we found we were met by a demand or suggestion that the department store trade in the large trade centers be excluded from the unfavorable list.

## DEPARTMENT STORE TRADE.

When this was first broached to the association we said "No" very emphatically, and we would not consider it at all, because that was one of the things that the association was formed for. Later on we found that jobbing houses from the Eastern States as well as larger cities were selling the department stores in a round-about way. There was one large store in Chicago we discovered was doing this. [The speaker here men-



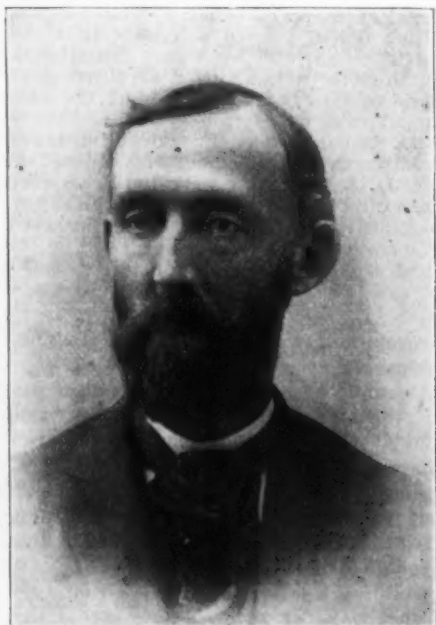
GEO. LEVERENZ, Treasurer

tioned a number of large jobbing houses that were discovered selling goods to department stores in a round-about way.]

## OUR LOCAL JOBBING HOUSES WERE LOSING MUCH BUSINESS.

Three members of our Executive Committee were in favor of reporting every one who had violated our resolutions, reporting them unfavorably. The other eight members of the Executive Committee said: "Gentlemen,

where will our members buy their goods, and what will it result in?" It would result, in their opinion, in simply this: That all jobbers, especially those who were reported unfavorably, would have entirely ignored our Hardware association—ignored our association and every other association everywhere. That is the position we were placed in. There is no disposition on the part of these jobbers to sell catalogue houses or sell what we call small "Czar" stores and "Golden Rule" stores through the country, but the larger trade; at the same



C. A. PECK, Secretary.

time I do not doubt but what there is hardly a member present who is not forced to buy his goods at times from either one of those concerns. So we exempted from our unfavorable list department store trade in the large trade centers such as Minneapolis and St. Paul. What we call a department store is one that uses a capital of \$25,000 or upward. The smaller stores we call the "Czar" and "Golden Rule" stores. Now these stores they will not sell. The department store trade as looked upon by our association does not interfere with the retail Hardware trade generally through the country; it is purely local—almost entirely so.

#### DOING BUSINESS ON A CASH BASIS.

This whole country is going just as fast as it possibly can go onto a cash basis. There is no good reason why Hardware cannot be sold for cash. I think every Hardware dealer should have a catalogue of these dealers, and say to his customers, "We will sell you at the same price, but you must pay the cost of boxing and other expenses in addition that you would have to pay if you bought from the department store or catalogue house."

#### SOMETHING TO THINK OVER.

Before we took this action we corresponded for six months regarding the matter. We called up the Executive Committee or members of our association, and also the home associations there. We have a very large local association in Minneapolis—some 150 to 200 members. They gave us their consent, and they said they did not care a particle about the large department store trade. I don't know what view you will take of this, but I thought I would tell you of it. We have a membership in Minnesota of about 425. I think we have taken in more members since we took that step than we did in proportion previous to it. It is something for you to think over. A member of a large firm told me that if they were given their choice of the retail trade of the State of Illinois or that of the department stores, they would take the department store trade. They said that the department store trade would take all the goods they manufactured.

Our convention will meet on February 27 and 28 and March 1. We will be glad to meet any of the members of this association there. We have made an especial effort to have the members bring their ladies this year.

#### Catalogue Houses.

The subject of exempting from the unfavorable list the department store trade handled by jobbers, to which

reference had been made by Mr. McCracken, brought out some discussion, in the course of which Andrew Noll of Chilton called attention to an article in *The Iron Age* of January 31, entitled "Another View of the Catalogue House Question." He thought it related so closely to this question and presented it in such shape that he would like to have it read to the convention by the secretary, but at this point objection was made to the further discussion of the subject by John Hughes of Fond du Lac and it was laid over, in the expectation of being brought up at another session.

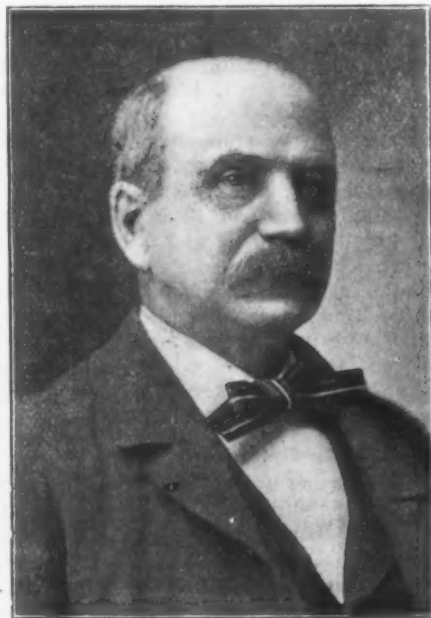
#### Cash vs. Credit.

The president suggested that the time was opportune for taking up other matters of immediate importance to the trade and called for some remarks relative to conducting business on a cash basis. L. M. Nash of Grand Rapids was first called on to explain how he conducts a credit business in the newly settled country in Northern Wisconsin and Northern Minnesota, to which he responded as follows:

I will state that a person has to work the credit business in the new territory the same as in a settled territory. There are good paying customers and there are poor ones. A person has to be a judge of the class of trade he is dealing with and trust them accordingly. Certainly there are more bad and more uncollectable accounts in a new country than in an old one. People go and settle on farms expecting great things—expecting to get results they have had on their old farms—and find themselves disappointed. I believe that the majority of men are honest and would like to pay their debts if they were able to, but in a great many instances they are disappointed. The credit system is being largely done away with even in our section of the country.

R. H. Suettinger of Two Rivers, who has made a notable success in handling his business on a cash basis, gave his experience as follows:

Four years ago January 1 we began to do a cash business, and I made up my mind to do it just as nearly right as I could. We refused all offers of credit to everybody, and I have made a success of it. My business has increased from a very small sum the first year to a good, fair sum in the next years, and I have the confidence of all my customers. If a party comes in to me who wants goods on time, and he is good, I take his note for part



A. H. SHELDON, Ex-President.

of his bill, but he will have to pay me at least half cash. With building contractors I make a bargain on the same line. They pay me so much when they have had a certain amount of goods and when they get through with their contract they pay the balance. I mark my goods in plain figures and give no cash discount. We have only one price. I have a cash register that prints coupons—a rebate check, which only holds good when purchases amount to \$10. That has a tendency to keep the trade, but 75 per cent. of the coupons never come back.



President Sheldon commented as follows:

I have very often wondered why we had so much less credits—less than we had three or four years ago and doing the same amount of business—but I think my credits have dropped off 50 per cent, with no effort on my part, within the last four or five years. It seems to me the doing away with credits is in the air.

Otto Schlafer of Appleton said that he had done a credit business for more than 20 years; it depended entirely upon the man you were doing business with as to the credit you gave him. He said he had lost less than 1 per cent. in bad accounts during the past year, and that he could generally tell when a man wanted credit whether he proposed to pay or not. In that connection Mr. Schlafer read an extract from an address by Dr. Chauncey M. Depew at the celebration of his sixty-first birthday, as follows:

Let us never lose our faith in human nature, no matter how often we are deceived. Do not let the deceptions destroy confidence in the real honesty, goodness, generosity, humanity and friendship that exists in the world. I have lost 25 per cent. of all I have ever made in lending money and indorsing notes, and have incurred generally the enmity of those I have helped because I did not keep it up. But every once in a while there was somebody who did return in full measure the credit for the help that was rendered. That faith was kept alive and the beauty and goodness of our human nature were made evident.

Mr. Schlafer said on his part he was benefited by doing a credit business.

Secretary Peck said he had lost less than three-quarters of 1 per cent. in bad accounts in the last 20 years; that many years ago he had attempted to do a cash business in conjunction with other merchants in his town, but it was not a success.

Other members contributed their views to the discussion, mainly in the direction of acknowledging a general disposition toward lax methods in giving credit.

#### THURSDAY MORNING SESSION.

The first subject presented for the consideration of the convention was a proposed change in the by-laws, which was adopted, providing that two members of the Executive Committee should hold over each year.

The president appointed the following Committee on Nomination of Officers: James Montgomery, Wausau; John Hughes, Fond du Lac; D. G. James, Richland Center; Andrew Noll, Chilton; C. B. Wagner, Burlington; A. D. Race, De Pere; L. Findlisen, Green Bay, and F. M. Finch, Whitewater.

At this stage of the proceedings the following delegation from the Chicago Hardware Dealers' Association entered the hall: D. McLaughlin, W. B. Costello, George A. Englehardt and F. F. Porter. They were welcomed by the president and a brief response was made by Mr. McLaughlin.

A communication was read from C. W. Aldrich of Minneapolis, Minn., requesting the association to adopt resolutions protesting against the policy of certain manufacturers and jobbers who were discriminating against the employment of traveling men over 45 years old. The communication was laid on the table.

#### Reports of Committees.

A recommendation by the Executive Committee that the offices of secretary and treasurer should be combined, and that the person filling the combined office should be required to give a bond, was adopted.

The Executive Committee also made a report that they had decided to ask the association for more time to consider the subject of acting in unison with Minnesota, North Dakota and Iowa relative to manufacturers and jobbers selling department stores, and requested the association to empower the committee to act. The convention on motion granted the request.

#### Resolutions.

The Committee on Resolutions presented the following report:

*Resolved*, That the association extend a vote of thanks to his Honor, the Mayor of Milwaukee, for extending to the members of this association the freedom of the city.

*Resolved*, That our association tender a vote of thanks to the press for the courtesy in reporting our meetings, and especially to *The Iron Age* for furnishing us with printed copies of last year's proceedings.

*Resolved*, That we extend our thanks to the managers of the Republican House for furnishing us with the free use of a hall for our meetings.

*Resolved*, That we extend to the Jobbers' and Manufacturers' Association of Milwaukee and to the National Stamping and Enameling Association our hearty thanks for the kindly feeling shown to our members in furnishing us with free entertainment while in the city.

*Whereas*, It seems to your committee that the old constitution and by-laws of this association is in several respects imperfect, and we would recommend that the president appoint a committee of three to draft new resolutions and by-laws and present the same at our next annual meeting.

*Whereas*, It has pleased Providence to take from our midst our worthy fellow members, Messrs. Fredericks of Beloit, D. J. Thomas of Berlin, H. J. Steinbach of Rice Lake and E. Sanborn of Fox Lake, we hereby tender our heartfelt sympathies to the bereaved families in their sorrow.

*Resolved*, That these resolutions be spread upon our minutes and a copy of same sent to the bereaved families.

The resolutions were unanimously adopted, the last by a rising vote.

The Committee on Legislation reported in favor of indorsing the action of the Retail Grocers' and General Merchants' Association of Wisconsin, who are endeavoring to have an act passed by the Legislature reducing the amount of exemption for laboring men from \$60 per month to \$40 per month and reducing the homestead exemption to \$2000. The convention on motion adopted resolutions favoring this action.

The Auditing Committee reported that they had examined the books of the secretary and treasurer and found the accounts correct.

#### Mr. McLaughlin's Remarks.

The president called on the Chicago delegation and a response at some length was made by Mr. McLaughlin. He dwelt particularly on the competition of the department stores in the city of Chicago. He stated that Chicago has at present no less than 25 department stores, some of which are of very large size, having 500 employees. The principal stores of this character are found along State street, and the impression seems to have become deeply rooted among the people, especially the ladies, that State street is the only street in the city on which to buy anything. In Chicago there are more than 400 retail Hardware stores, and these stores are finding very serious difficulty in maintaining their footing and are obliged to adopt every method possible to continue to hold on to the trade. Mr. McLaughlin said that his own association found it desirable to get together and purchase goods through a committee acting for the united members, thus enabling them to buy in large quantities from manufacturers and get the lowest prices. He said that in this way they could compete on certain lines with department stores. He invited the members of the association to attend the meeting of the Illinois Association at Galesburg on the 19th.

Further remarks were made by Messrs. Englehardt, Porter and Costello. Mr. Costello complimented the association very much on the good attendance and the great interest manifested, and believed they were doing well to unite for the general good.

The president appointed the following committee to take charge of the questions in the Question Box, and present those deemed suitable for discussion: L. M. Nash, Grand Rapids; Fred. Gassman, Milwaukee, and George P. Dana, Fond du Lac.

#### Advertising

Fred. Peck of Berlin, son of Secretary Peck, read the following paper on advertising:

I'll not say that this subject is a stale one, for the subject of advertising can never become stale to a live business man any more than eating to a growing boy. It is a subject which has been thoroughly digested heretofore, which has already been viewed from nearly every standpoint, has been argued from every sort of a premise, has had so many sorts of supporters, from the man

who has made a study of it and conquered it to the man who thinks he knows all about it without having mastered the rudiments, that I hesitate to speak on so precarious a subject lest I make a fool of myself in my efforts to demonstrate that I belong to the former class, or fall down in my efforts to convince you that I do not belong to the latter class.

I lay no claims to being an expert advertiser, but was born with an inherited desire to get my money's worth; and this desire has always prompted me to see that the advertising money was spent with that object in view. Advertising is

#### A BUSINESS PROPOSITION

pure and simple. It is a science only so far as any investment is a science. It is an investment the same as the purchase of a car of Stoves is an investment; both are moneys expended with an idea of return in profit—both should be purchased judiciously and with an idea of the requirements of the trade, both as to quality and quantity.

One article may pay big returns on an advertising investment in a high grade magazine, while another would fall flat on such an investment and pay well in a country weekly.

The advertising agent, or specialist, if he is successful, studies and knows both the patron's needs and possibilities in the advertising line, the same as you study the market on Nails; he also knows just where those needs can best be met—which magazine or paper to use. The country dealer, who cannot afford—probably does not need—the advertising specialist, should make a study of these features if he wishes to get the most value for his money.

For instance, there's not much return for the investment to be had in advertising Calf Weaners or Hog Rings in a local daily paper; neither would it display good judgment to advertise Coal Stoves extensively in a country weekly which circulated largely in a wooded section.

There's a great deal in tact in advertising as well as in selling goods. In fact,

#### TACT COUNTS

for a great deal more in this world than we give it credit for. The dear old woman who went out of her way to hand a tract on "The Evils of Dancing" to a one-legged man was very much lacking in this qualification; while the King's fool who was sentenced to death for some misdemeanor, yet was allowed to select his own method of shuffling off his mortal coil, exercised tact when he decided if it lay with him he would prefer to die of old age, and so saved his head.

We must know who the people are whom we wish to get at; and then we must "locate their vitals," as they say of a whale. In some communities a slangy worded advertisement might drive home a point, though to tell the truth, I believe they are very, very few; while in others, the smoothly written, concise, polished advertisement would be more readily digested. Right here allow me to state a vital necessity in successful advertising is to somewhere in the advertisement drive home and clinch a point which will bring you dollars and cents; somewhere state a truth which, either by previous statement or insinuation, will convince the reader that what you are talking about is either better or cheaper or more desirable than he will probably be able to find elsewhere. Let each ad. be written as though you expected the reader is about to purchase somewhere the article you are advertising, and it is necessary for you to convince him that yours is the place to buy it.

#### BE CONVINCING.

If you are advertising an article which possesses neither the feature of quality nor price, you'd better publish the weather report: It will do you just as much good and your readers more. I take no stock whatever in this style of advertising which says simply, "Our Hog Rings are the best," or which says, "We carry a full line of Hardware, Tinware, Stoves, &c." Why if the reader had never seen your advertisements he could guess that every Hardware dealer in the town would vouch for as much; but supposing you put in an advertisement like this, "If" (and have the "If" in italics), "If our Hog Rings are better than others, there's a reason for it. Step in and we'll tell you what it is." Then you have made a point. The customer thinks, without knowing he thinks it, that "those Hog Rings have some point which is worth something, else he wouldn't ask me in to expatiate on their merits." You have his curiosity aroused, and at the same time you have created the impression that you have a superior article.

#### CHANGING ADS.

That enterprise which permits an ad. to stay in the paper from Christmas time until it's time to advertise Fire Crackers, and from Fire Cracker time until Santa

Claus time again, has received enough general condemnation to need no further mention here. You'll find that the dealer who has no more regard for his advertisement than to thus neglect it is the sort who is waving his hands high in the air and proclaiming to his fellow men that "This advertising business is all a hold-up;" when the facts in the case are that if this same man would change his ad. as often as he does the shirt on his back his community would be so surprised at the frequency of the former and the infrequency of the latter that they'd actually visit his place of business out of curiosity. They would probably find him as busy as the man whom the editors tell about who wouldn't advertise; an editor went into his place of business and actually found him busy—he had the itch and a Waterbury watch, and when he wasn't busy scratching himself he was winding the watch.

Put an advertisement in the newspaper just

#### AS YOU SOW WHEAT—

not with an idea of watching each and every kernel and judging the whole thereby, but rather to judge by the granary at the end of the season; remembering this: use good seed and have the soil well cultivated; for no matter how good the seed, or how well put the advertisement, if the ground be not well cultivated, if you haven't the confidence of the readers of the advertisement, both seed and advertisement fall on barren ground.

Be sure to always keep faith with your customers; don't advertise an article as of superior merit unless it has it; don't advertise it as cheap in price unless it is cheap. One of the most successful advertising agents in the United States will not write an ad. unless he has first ascertained to his complete satisfaction that the article advertised is all that the proprietor claims for it.

Now I am speaking only of newspaper advertising in this paper, for I believe that

#### NEWSPAPER ADVERTISING

is the only steady kind of advertising that pays. (I am also only speaking from the retailer's standpoint.) Dodgers, fence board advertisements and theater programmes may be all right for an occasional "flyer," but the advertising that pays is the clean cut, fresh, pointed and pithy advertisement that is stuck constantly under the nose of the man who is intelligent enough to read and to want to read his daily or weekly newspaper. The man who can't read and who has no one to read to him is the kind whom you must

#### "CATCH AS CATCH CAN."

The way to catch the ignorant man's trade is to attend his barn raising, or the wedding of his daughter (whom he's been raising) and the chances are he'll swear by you.

I once heard of a "country jay," whose ideas of wealth were very limited, and who probably considered \$50 a fortune, who in response to an advertisement of Engines wrote for a price on one of a certain capacity; when the response came back saying that the Engine as described would cost \$1000, our friend promptly sat down and wrote the manufacturers as follows: "You durn fool, you; if I had a thousand what would I want of an Engine."

The amount of space required to use to

#### PROPERLY DISPLAY

an ad. also requires judgment, as it will vary with the article advertised and with the season of the year. Cuts are necessary to liven up an ad., but sometimes the cut of a fly will be more effective in advertising a Screen Door than a cut of the Door. Because you can, in a small space, advertise very advantageously a Penknife is no reason why you need a much larger space to advertise a Range; it might be that the reverse would prove true.

As the old story goes, "Because a man born in Ireland is called Irish, is no reason why kittens born in an oven should be called biscuit."

Don't use a set amount of space, but have plenty and vary it. Let it carry the impression that you are advertising for business and not from force of habit.

#### AN ADVERTISING APPROPRIATION.

Now as to the amount to be invested in advertising, this point has been very ably and thoroughly gone over in a paper at a previous session. I will simply say this, that I believe it is very generally conceded to be a good policy to lay aside a given amount annually for this purpose and work to that amount. If you are doing a \$20,000 business and believe that with judicious advertising you can increase your business 10 per cent., or \$2000, and suppose you estimate that you will make 10 per cent. on that \$2000, you will be justified in investing in the neighborhood of \$100 in additional advertising. I am allowing that this is the minimum.

Too many merchants advertise for a month, or until



the printer's bill comes in, and then, because they have to count out the cold cash and no customer comes in and purchases enough goods in response to the ad. so that the profits on the same will meet the printer's bill, they stop the advertisement, or put in a little card advertisement which reads very much as will the epitaph on their tombstone.

Terry says a business man will be known to some extent by his

#### STYLE OF ADVERTISEMENT.

If he merely revamps old and stereotyped ideas and adopts other men's ideas, phrases and expressions, the probabilities are that he does the same in his business. Every man should endeavor in form or method to improve upon what he sees about him.

The time was, years and years ago, when a man could put a standing ad. in the newspaper and have it worth something; but that time has gone by—it belongs to the days of the canal boat.

I believe that the merchant of to-day who does not advertise is

#### MISSING AN ADVANTAGE,

and the merchant who does advertise, with an ad. that stands from week to week, is missing an advantage and paying for the privilege.

If advertising is worth anything—if it has a mission—it is to inform people; and you can't give the public any information by telling them something which they knew before. If you have the best store in town don't tell people of it—take it for granted that everybody knows it, or ought to know it—but tell them why it is the best store and carry the impression that you suppose, of course, that they know it is. In my opinion it is a good plan to leave the reader something to think out. "Is 35 years' experience worth anything?" is better than if it read "35 years' experience is worth something." "Peck makes his own Tinware" is better put than "Peck's own make of Tinware is better than the machine made," because the former conveys the same idea, but allows the reader to draw the conclusion himself. Either way of putting it wouldn't prevent Peck from buying his Tinware from the jobber if his tin shop was overworked and labeling it his own make.

There may be those who differ with me, but I believe that only that merchant who conducts

#### A "CHEAP STORE"

should advertise prices to any extent. It is certainly of no avail to advertise prices unless the prices are low; and in order to advertise low prices the dealer must carry cheap goods—goods to correspond with the prices. I admit, of course, that there are times when the cheap competition must be met, but the dealer should get goods for the occasion and advertise prices which are out of reach, but I believe that a business which is built up on quality is built on the rock, while that which is built on prices is short lived and built on the sand.

Here's another idea—keep your eye on

#### THE PRINTER.

Many printers take a pride in their art and know how to properly display and insert an ad., but a large percentage seem to think that large, bold faced type is all that is necessary to give an advertiser his money's worth. Pick up any standard magazine of the day and see if you do not find that many of the advertisements which create the best impression and most forcibly present the merits of the article advertised are not the most modest in their typography. We have followed the plan for several years in our business of having a special type, of which we purchase a font, and change the type yearly. We own the type and own it exclusively. It makes our ad. stand out from the other ads.

It is better for the dealer to print out his advertisement as he wants it, showing display matter, &c., so that the printer can make no mistake; for the advertiser knows better than the compositor what point he wishes to emphasize and where he wishes to make an impression. Some printers have better taste and judgment in these matters than the advertiser. Of course under those circumstances it would be better to leave the whole matter with the printer, simply giving him the correct ideas. See that your advertisement is put in a good position, given enough ink and not too much, that it is displayed as it should be; in fact, see that it is what you have paid for, the same as the goods you buy. Some printers take pride in their advertising columns, others simply throw them together.

#### CANNOT ADVERTISE EVERYTHING.

In my opinion a dealer cannot advertise everything he has in his store in one 5-inch double column ad. In fact, I do not think he can advertise any more than one article in such a size advertisement and have it amount to anything—two articles at the outside.

Now advertising is like courtship—you had better not undertake it unless you mean business. To carry the simile a little further, it's like courtship in the ice cream season, in that if you go into it half heartedly it is money thrown away.

I accepted the proposition to write this paper so as to hold my job. The secretary of this institution and the personage who requested me to write the paper and the gentleman who furnished the capital which I help to operate are one. I would undoubtedly have been requested to write on "How to Make a Hardware Investment pay 50 Per Cent. Dividends" were it not for a fear that I would give away trade secrets.

I have no apologies to offer, for I should consider that whatever subject your honorable committee might assign to me to write upon they could not have selected a better or more competent exponent.

#### THE QUESTION BOX.

The Question Box was taken up, and the first question presented for discussion was the following:

*What is the best way to sell a Cook Stove to a man if you have doubts as to his credit?*

This brought out quite an interesting discussion, in the course of which the fact was made plain that most of the merchants adopted practically the same method, which is to require a partial payment of cash and have the buyer sign a contract in the nature of a chattel mortgage which gives the merchant the Stove as security for the payment of the remainder.

*How can you prevent creosote from forming in a chimney?*

This seemed to be a difficult question to answer, and one of the dealers said he thought the best way was by having a good draft.

*What is the surest method to secure the entry of goods delivered either for cash or for book account?*

Various methods were suggested, among which was one suggested of carrying a book in the pocket and making an entry in it as soon as the goods are sold. Some dealers require their clerks to record every sale before going ahead with another customer, as they are likely to forget some sales they have made unless this is done.

*Is this organization to accumulate money? If not, why should it not reduce the fees paid by members?*

The secretary answered that he thought it would be a good thing to have a little "shot in the locker" for a wet day.

*Is it not time that we organize a National Hardware Association?*

This brought out a very moderate expression of sentiment in favor of a national body. The members seemed to be in favor of co-operating with other associations, but opposed to putting their entire membership into some larger body.

*How can goods be so marked that in case they are stolen they can be identified?*

Various methods of marking Cutlery and other goods were explained by members.

*What has been the experience of retailers in closing early?*

Quite a number of the dealers stated that they had adopted a rule to close early and that it had worked very satisfactorily.

*What is the best Shingle Nail, Three Penny Cut or Three Penny Wire? Which will last the longest?*

Some of the dealers stated that they were selling principally 3d Wire Shingle Nails, which are of the same thickness as the 4d but of the length of the common 3d, but one member said that in his town a greater call was being experienced for 3d Cut Nails for this purpose.

#### Mr. McCracken's Address.

The Question Box being exhausted, Secretary McCracken of the Minnesota Association was called upon, who read the following address:

After referring to the present movement among the Hardware trade, "whose mission is association, whose keystone is organization, and whose ultimatum, we trust, will be the federation of the Hardware trade," Mr. Mc-

Cracken referred to the gratifying growth of the Wisconsin Association. He then touched upon the important work which can in this way be accomplished, referring to the matter in the following terms:

You can in no sense not detrimental to your own best interest isolate yourself from our association work, bringing you as it does and will into close touch with your Hardware friends, as well as into intelligent co-operation with the representative dealers of your State. You certainly cannot hope to be benefited unless you are interested, and you will be interested in this work just in proportion as you take upon yourself some degree of responsibility. You should not be willing to accept gratuitously the labor of others whose efforts are solely directed to lighten some business burden you are called upon to bear. You should be a responsible individual unit in the frame work of your State Hardware association, as you have everything to gain and nothing to lose thereby. The time is not far distant when it will be the exception rather than the rule not to be associated with us, as it is only through united effort that the best of results are obtainable, and is the only manner in which we can hope to arrive at a harmonious adjustment of the trade difficulties through which we are now passing. The annual meetings of your association should always be attended. In and through them you can at all times more readily voice the results of your deliberations, and have the co-operation of all toward such action as you may deem expedient and beneficial to your business requirements. It is your duty to be loyal and helpful to the officers of your association and to at all times assist them in the discharge of their duties. The place for you to kick and find fault with them is right here, and now. Up in Minnesota we have found the best kickers to be the poorest pullers—and chronic grumblers usually have an impediment in their speech when we meet them face to face.

We do not believe the individual members of our associations appreciate fully the relation they bear to our work. When you joined with us you agreed on your part to do certain things else we never would have taken you in, and if you are negligent or not willing to do as you agreed you are no help to us. You should aim at all times to be a living exponent of what you profess, as it matters very little what you preach if you do not carry out in practice the principles for which you stand. We tell our boys if their faith has become so cold that they cannot be loyal to us, we want them to take out a 30-day "traveling card" and have it expire by limitation. We had very much rather have a good, lively kicker for a member than one of those somnambulistic fellows that you have to "put a tag on" to steer him to an annual meeting. We want you to remember that the growth and life of your association depend solely and only upon the loyalty of each individual member thereto.

Mr. McCracken emphasized the fact that the officers and executive members of the association are working without remuneration, and called upon the trade to give them hearty and united support. In connection with the effort which is made to discriminate between jobbers and manufacturers who are favorable to the association and those who are not, the following caution was given:

In formulating your list of such parties as you deem unfavorable mediums for the distribution of Hardware, and whom you ask the jobber and manufacturer to refrain from selling, be sure you err on the safe side for the time being, rather than do injury to some of your business neighbors by placing them unjustly on this list. Let every member weigh well his action in reporting candidates for this list, and not allow business or local jealousies to warp his judgment.

The dignity and importance of the movement toward associations and the extent to which they are becoming representative of the trade was touched upon as follows:

These associations embody the earnest conviction of broad minded men based upon sound and enduring principles of business equity, banded together for the laudable purpose of endeavoring to correct the many abuses that have gradually crept into our business life, and will surely serve to benefit every retail dealer and to foster his interest.

It is a serious assemblage of serious men for the consideration of serious problems; the consensus of business opinion to-day is in favor of associating together and working to the best interest of all; when the individual fails, organization succeeds; associated, we become an irresistible power; obstacles but incite renewed effort; difficulties develop hidden strength; we are becoming strong, you can make us stronger.

Whatever may have been your opinion heretofore as to association work, it remains an undisputed fact that we are growing in numbers and usefulness not only in

our own State, but throughout the land. The principles which underlie all associations of this character are right and just, and in associating yourselves with us you are by no means taking any backward step, but rather stand out upon a higher plane of action, immeasurably benefiting yourself, and joining hands with those who have and are laboring for your commercial advancement.

Extended reference was also made by Mr. McCracken to the Retail Hardware Dealers' Mutual Insurance Company of Minnesota, their methods, and the advantages which such an organization affords the trade.

After a vote of thanks had been tendered to Mr. McCracken, the convention adjourned.

#### THURSDAY AFTERNOON SESSION.

Secretary Peck stated that on further consideration of the proposition to unite the offices of secretary and treasurer, it had been deemed desirable for the best interests of the association to have the officers scattered over the State instead of concentrated and the same thing would apply in combining offices; therefore, he was inclined to favor keeping the secretary and treasurer's offices separate, as heretofore. On motion of John Hughes the action at the morning session was reconsidered and the proposition to combine these offices was defeated.

#### Election of Officers.

The Committee on Nominations made the following report:

President,  
John Hessel, Antigo.  
Vice-President,  
Otto Schlafer, Appleton.  
Secretary,  
C. A. Peck, Berlin.  
Treasurer,  
George Leverenz, New Holstein.  
Executive Committee,  
Henry Droegkamp, Milwaukee; Arthur Heins, Elkhart Lake; E. H. Ramm, New London; James Wilkie, Fond du Lac.

The secretary by unanimous vote was directed to cast one ballot for the entire list of officers and they were declared duly elected.

President Hessel thanked the association for the honor conferred upon him, after which, on motion of L. M. Nash, a vote of thanks was given the retiring officers.

The bond of the treasurer was fixed at \$1000, the association to pay the cost.

#### Question Box.

The discussion of the contents of the Question Box was resumed, as follows:

*Would it not be prudent and just to express our thanks to such manufacturers and jobbers who have honored the request of our association not to sell to department stores?*

This brought out the statement that but one house had been complained of during the year and that the Milwaukee jobbers had particularly favored the interests of the retail dealers. It was concluded, however, that orders would be more acceptable than thanks.

*How are our members satisfied with association work?*

Emphatic approval was expressed by a number of members.

*Why do Stove manufacturers make different Pipe Collars for Stoves of the same size?*

This brought out a most animated and interesting discussion.

*What do you think of a retail Hardware dealer who cannot make his living by working six days a week, but keeps his store open on Sunday?*

The instant rejoinder of one member that he had better go out of business met with hearty expressions of approval on all sides.

*Will some one speak on the importance of a friendly feeling between dealers in the same town and neighboring towns?*



Quite a number of members felt called upon to give their experience in this respect, and many of them were inclined to believe that the growth of friendly feeling between dealers in the same town had been greatly promoted by the work of the association.

*Ask the traveling men how the retailer can improve his business?*

This was answered at some length by J. C. Bump of the Eclipse Stove Company, who advised dealers to buy goods cheap and sell at a good profit, but also to buy such goods as would be sure to give customers satisfaction.

#### The Inter-State Association.

Irving A. Sibley of South Bend, Ind., member of the Executive Committee of the Inter-State Retail Hardware Dealers' Association, was called on and proceeded to give reasons why Wisconsin should join that association. He explained the objects sought to be accomplished, and hoped that all objections to joining could be overcome.

A committee consisting of John Hughes, James Montgomery and C. A. Peck was appointed to consider this question and report within an hour.

They retired and considered the question and reported recommending Otto Schlafer and L. M. Nash to be appointed to attend the next meeting of the Inter-State Association for the purpose of deciding upon the advisability of joining that association, with power to act. On motion of Geo. P. Dana the report was received with the amendment that the committee named should report to the next convention.

A. H. Sheldon of Janesville read the following paper on

#### Trusts.

Perhaps the most startling feature of the present century is the enormous increase of wealth in Europe and America, and the aggregation of immense masses of capital devoted to productive industry through the agency of the so-called "Trust."

This particular form of business management, at least in respect to its magnitude, originated with the present generation in the oil and coal industries. It was about the year 1872 that the Standard Oil Company, the typical trust, though not yet formally organized as such, set out on its world conquering career. This notorious, if not infamous, monopoly first became such by the invention and organization of the trust feature in its management in the year 1882. By this device the control of all the oil refining corporations, partnerships and individual properties which joined in the scheme was placed in the hands of trustees, although the ownership of the several properties remained unchanged. Such was the trust, strictly so called. But after a time, in consequence of hostile popular agitation and legislative interference, this mode of combination was found inconvenient, and was superseded by the formation of companies or corporations, which obtained ownership of the plants and managed them by directors instead of trustees. Since then the term "Trust," though not strictly applicable, yet in popular usage, "covers any agreement, pool, combination or consolidation of two or more competing concerns which results in a complete or partial monopoly in certain territory."

Since the marvelous success of the Standard Oil Company a large number of similar organizations have sprung up, especially within the last two or three years—how many it is impossible to say, but certainly upward of 500, besides as many more which, though not incorporated, yet belong to the same category.

The aggregate capitalization of these concerns, including wind and water, may be safely taken at from eight to ten thousand millions of dollars—figures which make one gasp—though probably the actual investment is but a third or fourth of this vast sum. But it must not be forgotten that we poor victims are required to pay good round, fat dividends on the wind and water, as well as on the dry, hard, solid cash.

Whatever one may think of the good or evil of the trust system from a merely economic point of view, no one, I think, can doubt that the practically absolute, irresponsible and arbitrary control of these uncounted millions in the hands of a few constitutes a most serious menace to the social, business and political welfare of the people. This, if there were no other, is the great and overwhelming argument against them.

But besides the vast capital they wield, these trusts cover and control almost every branch of profitable industry and affect the welfare of almost every individual.

There is hardly any line of production and manufacture which they do not dominate from chewing gum to locomotives; there is hardly any necessary of life—food, fuel, clothing and shelter, books and education—which they do not tamper with and tax at their own sweet will; there is hardly any occupation, from scavenger to astronomer, with which they do not interfere, or compel to pay tribute; there is scarcely any business man to whom they do not dictate how he shall conduct his business, or whether he shall be permitted to do business at all.

There is no individual, of any class in society, from the humblest day laborer to the chief magistrate of the republic, at any stage of his earthly existence, from birth till death—and not even then, for the coffin trust levies on the corpse—who is not forced to pay tribute to these insolent, arbitrary, taxing powers, and to submit to their tyranny and extortion. Nor is this all. For they use their all pervading influence and their millions of money or terrorize and silence opposition; to corrupt law-makers in the legislatures; and to pervert justice in the courts; so as to defraud and oppress, and often ruin, those who antagonize them, and to escape the penalties of their own lawless acts. And yet the trust claims to be a beneficent institution! Let us, then, consider this claim and see how far it is supported by facts.

#### AMONG THE PRINCIPAL ADVANTAGES ASSERTED

for the trust, the first and most important is that it cheapens production through the lessening of expense and saving of waste in plant, material and management, and by its increasing the efficiency of labor. And this claim is valid, though not to the extent asserted. For the truth is that the chief factors in the cheapening of production in these days are the discoveries of science, the progress of invention and the facility of transportation. But admitting all that the advocates of trusts assume, to whom do the benefits of this cheapening inure? To the general public or to the profit of the trust? The facts admit of but one answer. For while product has been greatly cheapened, you have but to look at, not use lessening, but the comparative increase in the price of commodities controlled by the trust and the enormous dividends they have declared, to see by whom the fruits have been reaped. In point of fact the public have been compelled to pay a greater price for an inferior article than if the business were open to competition. The only instances where the trust has lowered prices have been in those cases where they were seeking to crush out competition. When they have had the business in their own hands the cost to the public has been increased. I need only adduce the notorious instances of the oil and sugar trusts, and refer you for the facts to the *Review of Reviews* for June, 1899.

A second advantage claimed for the trust is that it increases the compensation of labor—that is, of course, the labor they employ. This claim is seriously questionable, but admitting it to be true of the labor they employ, what of the thousands of laborers they have thrown out of work by the closing of factories and the army of commercial travelers who have been deprived of their occupation? And is it not almost obvious that if these monopolies were abolished, not only would more men be employed, but also higher wages be paid?

Of the other advantages asserted for the trust, one is that they are able to make use of material otherwise unprofitable, which is probably true; and another is that they afford an opportunity to the investors of small capital, of which latter it may be said that they are rash and will probably be unfortunate men who shall invest their property in these concerns, and taking their name for what it signifies—be credulous enough to trust the "Trust."

#### THE CONDITION WHICH THE TRUST HAS CREATED

and which now confronts the business men throughout the country is certainly serious. Are we to be mere tools of monopoly, servants to do their bidding and submit to their dictation? Or shall we strive to preserve the liberty that we still possess and regain what we have lost—so as to conduct our own business according to our own best judgment? Are we still to guard the opportunities for enterprising and energetic men to engage in business, where they may win a competence and honorable reputation, uncontrolled by arrogant and insolent corporate wealth? If so we must fight the trust, or at the least, endeavor to place such restrictions upon it as shall render it harmless if not beneficent.

If it be asked what can we do about it, let me throw out in closing a few suggestions for your consideration.

We should endeavor to secure such legislation (national), if possible, as will

1. Limit the amount of capital of any corporation.
2. Restrict the capital of the corporation to the money actually invested.
3. Take from these trusts all protection in the way of tariff, subsidy or bounty.

4. Require a Government license, under the interstate commerce provision of the Constitution, before they may do business outside the State in which they are incorporated.

5. Require them in stated reports to submit their transactions to official and public scrutiny.

A communication was read from the Kelly Axe Mfg. Company promising not to sell to department stores and catalogue houses, and a vote of thanks was given them.

After remarks of a general character by a number of members the convention adjourned *sine die*.

### OUTSIDE THE CONVENTION.

The convention was attended by a large number of representatives of manufacturing and jobbing interests. Some of the manufacturers made interesting displays of their products in the parlors of the hotel. The exhibits thus made have in past years been exceeded in individual cases perhaps, but this year the number of displays made is believed to have surpassed anything of the kind done at preceding Wisconsin conventions.

The Washington Cutlery Company of Milwaukee made a fine display of Carvers, Butcher Knives, Shears, Razors, Pocket Cutlery, Tinnerns' Snips, &c. They make a specialty of fine packages for goods and exhibited a handsome showcase of new pattern. They use aluminum very largely in getting up their cases and packages. The company are also sole agents for the McGuire Lawn Mowers and showed a number of samples. The representatives of the company in attendance were G. H. Lehrkind, Chas. Lehrkind, Willard Powell and H. Volckmann. They distributed as souvenirs very fine chamolais skins on which their leading goods were advertised.

The Art Stove Company of Detroit, Mich., exhibited samples of a new Steel Range, the Art Laurel high grade base burner, the Crescent Laurel moderate priced base burner and the Twentieth Century soft coal heater. This exhibit was in charge of E. J. Hahn, assisted by A. F. Bantelmann, the company's Milwaukee agent.

The Stowell Mfg. & Foundry Company of South Milwaukee exhibited Parlor Door Hangers, Barn Door Hangers and a number of other Hardware specialties of their manufacture. Their products cover a wide range of articles, as shown by their catalogue, copies of which were placed on distribution. A new Parlor Door Hanger was displayed, which has both an adjustable Hanger and an adjustable track, the latter being easily adjusted at the center of the doorway. This exhibit was in charge of M. J. Evans.

The Wilcox Mfg. Company of Aurora, Ill., showed a full line of Door Hangers, Hasps, Double Acting Spring Hinges, the Velox Grindstone and a number of small specialties. The Grindstone attracted special attention. The company were represented by L. R. Simpson and H. O. Spencer.

The Great Western Mfg. Company of La Porte, Ind., showed models of their Adlake, America and Crown Bicycles. The company are now manufacturing the Adlake wheels formerly made by the Adams & Westlake Mfg. Company, Chicago, and the America wheels, formerly made by the David Bradley Mfg. Company, Chicago. They claim to have one of the largest Bicycle factories in the United States, having a daily capacity of 200 wheels. The company's representatives were C. H. Sterner and E. J. Lonn.

Lawrence Bros., Sterling, Ill., displayed Door Hangers, Hinges and other Hardware Specialties. They were represented by B. F. Isbell.

The Wheeling Corrugating Company of Wheeling, W. Va., exhibited a large number of samples of Spouting, Elbows, Tin Plate and other specialties of their own manufacture. They are makers of a full line of Tin Plate as well as Steel Ceilings and Tinnerns' Supplies generally. They distributed brass bound Rules and miniature bars of Solder as souvenirs. The company's representative was W. J. Norris of the Chicago branch.

The Toledo Register Company of Toledo, Ohio, showed their recently patented Toledo Side Wall Register, which is a combined Register box and Register, designed to be placed in the wall directly on the floor of the room so as to secure the largest possible outlet for hot air. This register is simple and practical. The exhibit was in

charge of Geo. Auer, president of the company and inventor of the Register.

The E-Z Mfg. Company of Galesburg, Ill., displayed a large number of the E-Z-Ketch Mouse and Rat Traps, which are made entirely of metal. This exhibit was in charge of Miss A. B. Porter, who had the distinction of being the only woman salesman in attendance at the convention.

Berry Brothers of Detroit, Mich., made a fine display of Varnishes for all purposes. Numerous specimens of wood were shown to indicate the character of the finish imparted by different kinds of Varnish. Souvenirs were distributed consisting of small mirrors with celluloid backs, handsome calendars and display cards of various kinds.

The Belding-Hall Mfg. Company of Chicago exhibited a number of styles of their Refrigerators. The exhibit was in charge of R. H. Hill.

Morley Brothers of Saginaw, Mich., made an exhibit of Bicycles. This exhibit was in charge of Day Gordon, S. H. Corbett and Joseph Mertle.

J. D. Warren of the J. D. Warren Mfg. Company, Chicago, displayed photographs and illustrated circulars showing the arrangement of the Warren Patent Hardware Shelving and the various combinations of which the Shelving is susceptible.

The Berger Mfg. Company of Canton, Ohio, displayed specimens of the Berger Classik Metal Ceilings and other sheet metal specialties. The exhibit was in charge of Walter Voigt.

Charles Morrill, 277 Broadway, New York, manufacturer of Saw Sets, was represented by Julian Hurdle, who exhibited Morrill Perfect Saw Sets, which attracted much attention.

The Estate of P. D. Beckwith, Dowagiac, Mich., manufacturers of Round Oak Stoves, Ranges and Furnaces, were represented by J. O. Becraft and Geo. T. Adams, who distributed a souvenir in the form of a stick pin and bearing a miniature Round Oak Stove. The miniature was a perfect reproduction of the Stove which has made this establishment famous.

The Brand Stove Company of Milwaukee were represented by W. F. Hyde, secretary, assisted by Chas. F. Riehl and A. D. Meyer. They distributed an attractive souvenir in the form of a watch charm beautifully finished to resemble a gold piece and bearing on it the company's name and trade-mark.

E. C. Atkins & Co. of Indianapolis, Ind., were represented by Julian W. Perkins, assistant secretary, and M. E. Rounds, Northwestern sales manager. They distributed as a souvenir a beautiful badge consisting of a cross bar representing a Saw, from which was suspended a Circular Saw bearing a four leaf clover on which were given the locations of their branch houses. The badge was gold finished, and the whole device was admirably gotten up.

The John Pritzlaff Hardware Company of Milwaukee were represented by a large number of their traveling men as follows: Geo. J. Davies, Chas. Mohr, E. J. Stansbury, Wm. Daehling, A. Cheasick, A. Killian, Geo. Daniels, C. J. Davies, P. F. Stowers, Chas. Zabel, Wm. Schnell, John Peterman, Fred Gaulke, Edward Straka and Edward Stann. They distributed as a souvenir a very practical and acceptable article in the form of a Spring Tape Measure encased in a substantial celluloid cover, having on one side the portrait of John Pritzlaff and on the other side a picture of the company's store.

The Wm. Frankfurth Hardware Company of Milwaukee were also represented by a large number of their traveling men as follows: Henry M. Gay, G. P. Plitchke, Victor Husting, Chas. Haekler, Fred. Hayden, Robt. Nazro, Jas. Davidson, Edward Dufour, Wm. E. Morehouse and A. Goetler. They distributed beautifully finished nickel plated Match Boxes having celluloid sides bearing the company's name and a picture of their store.

The Fuller-Warren Company, Stove manufacturers, of Milwaukee, were represented by C. W. Jones, secretary, and J. C. Hood and H. G. Crane, Wisconsin salesman.

The E. Bement's Sons Company, manufacturers of Stoves and Ranges of Lansing, Mich., were represented by Howard Bement and H. S. Bartholomew from the fac-



tory, and W. H. Newbrough and Lee A. Smith from the Milwaukee office. They have recently established themselves in a new warehouse at 104 Reed street.

The Reading Hardware Company of Reading, Pa., manufacturers of Builders' Hardware, were represented by W. H. Bennett, manager of the Chicago branch. The company's goods are so well known that Mr. Bennett found it unnecessary to make an exhibit of their products.

Geo. W. Trout & Co., Chicago, were represented by Geo. W. Trout and John D. Powell. They distributed handsome calendars, reproducing some of the famous Rinehart Indians.

The Allerton-Clarke Company, manufacturers of Files, Chicago, were represented by C. A. Robertson.

J. L. Perkins & Co., Chicago, were represented by H. C. Frantz.

The Coldwell Lawn Mower Company of Newburgh, N. Y., were represented by John T. Bullen, Western manager, 105 Lake street, Chicago.

F. Westfahl & Co., manufacturers of Files, Milwaukee, Wis., were represented by A. H. Esbenshade.

The United States Steel Lock Company, manufacturers of Warner Locks, Clinton, Iowa, were represented by A. C. Ohlendorf, manager of the Chicago office.

The Abner Acetylene Gas Company, Chicago, were represented by W. C. Heimbuecher, president and treasurer.

Wallis, Robinson & Co., Chicago, manufacturers' agents for Hardware Specialties, were represented by Geo. A. Metcalf.

Geo. H. Bishop & Co., Saw manufacturers, were represented by John J. Sinzich of Chicago.

The Rochester Stamping Company, Rochester, N. Y., were represented by D. A. Lewis.

Geuder & Paeschke Mfg. Company, manufacturers of tin ware, Milwaukee, were represented by Geo. Geuder.

The Eclipse Stove Company, Mansfield, Ohio, were represented by J. C. Bump.

Rathbone, Sard & Co., stove manufacturers, of Aurora, Ill., were represented by J. R. Barse.

The Favorite Stove & Range Company of Piqua, Ohio, were represented by W. H. Pier.

Among the visitors were representatives of Hardware associations in other States, who were very cordially welcomed. These gentlemen comprised Irving A. Sibley of South Bend, Ind.; D. McLaughlin, Geo. D. Englehardt, W. B. Costello and F. F. Porter of Chicago, and Thos. McCracken of Minneapolis, Minn.

The members of the convention were entertained at the Davidson and Alhambra theaters on Wednesday and Thursday evenings by the Milwaukee jobbers and manufacturers as follows: The John Pritzlaff Hardware Company, Wm. Frankfurth Hardware Company, Fuller-Warren Stove Company, Brand Stove Company, National Stamping & Enameling Company, Geuder & Paeschke Mfg. Company, Lindsay Brothers, Washington Cutlery Company, the A. J. Lindemann & Hoverston Company and the Speich Stove Repair Company.

J. P. Lindemann & Sons of Milwaukee had the convention photographed on Wednesday afternoon in front of the Republican House, for the purpose of furnishing every member of the association with a half-tone picture of the members printed on fine cardboard. It will doubtless be carefully preserved as a memento of the occasion. The interests of the firm were looked after by Chas. Lindemann, who is probably as well known to the entire Hardware trade of Wisconsin as any who travel through that territory.

Secretary Peck prepared in advance of the convention a very handsome souvenir programme, containing a programme of exercises, the constitution of the association, names of officers of other Hardware associations, advertisements of numerous jobbers and manufacturers and considerable miscellaneous information.

On Friday morning a large number of the members who had remained for the purpose were shown through

the great Kieckhefer plant of the National Enameling & Stamping Company, each visitor receiving a handsome souvenir of the occasion.

## Hardware Trade in 1863.

FROM Edward W. Morley of Morley Bros., Saginaw, Mich., we have the following interesting communication, which suggests the changes which have taken place in the Hardware trade in a little more than a generation, not only in the price of goods and in general conditions, but also in the *personnel* of its merchants and manufacturers:

*To the Editor:* In destroying some of our old books and papers that had accumulated since we first commenced business in 1863, we came across a book in which were pasted invoices of goods we bought from different jobbers and manufacturers in the year 1863. We were surprised to see how few of the firms are doing business now, and what great changes have taken place in the last 38 years. In those days the main thing was to get the goods, the price paid for them not cutting much figure.

Saginaw when we commenced business was a small town in the woods. The salt development had just commenced and that, with the lumbering, made it a very active town. There were no bridges across the river—the only way was to cross by an old rope ferry. We had no continued rail facilities, goods having to be carted about 15 miles. We remember *The Iron Age* at that time as being a very small paper, with office upstairs in a small building on Beekman street, New York. In those days there were practically no traveling salesmen coming to this part of the country. Once a year William G. Smythe of Russell & Erwin Mfg. Company came up and got a good fat order.

We inclose a list of the people we bought of, the kind of goods purchased, and the prices, thinking it might be of interest to you, as it is the oldest record we have of goods purchased from the manufacturer and jobber.

You will notice that in those days, instead of taking off a discount, a percentage was added on many goods. For example Firmer Chisels, to the price of which 25 per cent. was added; also Files, 15 per cent.

Among others, we bought goods of a firm called J. S. & H. C. Prouty, 3 Platt street, New York. Many of the old Hardwaremen will remember that house. They were large purchasers of bankrupt stocks. We remember their second floor was piled with goods knee deep, in broken packages, some of them rusty; but goods were so scarce in those days that people went there and bought, as they were glad to get the goods, rather than wait for fresher goods from the factory. This firm bought at auction at one time a vessel that tried to run the blockade at some of the Southern ports. They bought the whole outfit, and they had in their store cotton thread by the cord, rubber shoes—in fact almost as general a line as the big department store has now.

Saginaw in 1901 is a great contrast to Saginaw in 1863. The salt interest still continues, but the lumber interest is on the decline. In its place, however, are sugar beet factories, piano factories and others, and there has lately been organized a plate glass factory, with a paid in capital of \$350,000.

### From 1863 Invoices

HERMANN BOKER & Co., New York, December 19, 1863: Taper Files, 4½-inch, at \$15.20 per gross.

DEANS & BAGNALL, Boston, Mass., September 20: No. 9 Bright Wire at 10 cents per pound, 25 per cent. off.

W. H. LIVINGSTONE & Co., Dey street, New York, September 12: Buck Saws at \$11 per dozen, 5 per cent. cash.

W. C. SCOFIELD, Cleveland, September 9: Carbon Oil at 65 cents.

HERVEY & BOUSEFIELD, Cleveland, February 20: Two-hoop Pails at \$2.30 per dozen.

W. O. DAVEY, Jersey City: Navy Oakum at 8½ cents.

NEWELL & SPERRY, Jordan, N. Y., July 10: Canal or Railroad Barrows at \$1.75 each, 5 per cent. cash.

W. F. CAREY & Co., Cleveland, September 10 (Agent of Shoenberger): 7-9-inch Round Iron at 4%, 1-inch Round Iron at 4½ cents.

- CHESS, SMYTH & Co., Pittsburgh, April 24: 10 to 60d. Nails at \$5.12½; 3d. Nails at \$6.37½.
- GEO. PHIL. SCHIFFLIN, 95 William street, New York, September 28: Cross-cut Saws at 39 cents per foot.
- CASEY & CLARK, Auburn, N. Y., November 10: Double Jack Planes at 85 cents, 10 per cent. off.
- W. & B. DOUGLAS, 87 John street, New York, April 2: No. 2 Grindstone Hangers complete at \$12 per dozen, 37½ per cent. off.
- THOS. PROSSER & Co., 28 Platt street, New York, May 4: 45 feet No. 3 5-inch Welded Pipe at \$1.75 per foot.
- GEO. W. LEGGETT, New York, September 21: IC Tin at \$12 per box; IX Tin, 14 x 20, at \$15.50 per box.
- PHELPS, DODGE & Co., 10 Cliff street, New York, September 23: 14-ounce Sheet Copper, tinned, 48 cents; Brass Kettles, 43 cents; fine Spelter Solder, 40 cents; May 4: Sheet Zinc, 13 cents per pound; July 30: IC Tin, \$11.75 per box; IX Tin, \$14 per box; small Pig Tin, 49 cents; Slab Spelter, 8 cents.
- RUSSELL & ERWIN MFG. COMPANY, 87 Beekman street, New York, September 8: 3580 pounds Sash Weights, 2 cents; November 27: 6 dozen F. & S. Oneida Traps, No. 1, \$3; Oct. 22: 5-16-inch Firmer Chisels, \$1. add 25 per cent; Arcade Mill Files, 8-inch, at \$2; 10-inch, \$2.94; add 15 per cent; Parr's Screw Drivers, No. 1, 2-inch, \$1.50, add 25 per cent; double Plane Irons, 2-inch, \$4.12½ per dozen, add 20 per cent; October 7: Heavy Strap Hinges, 6 and 8 inch, 11 cents per pound; 1-inch No. 15 Screws, 60 cents, 25 and 5 per cent.; October 2: Burden Horse-shoes, \$6 per keg.
- SINGER, NIMICK & Co., Pittsburgh, May 22: 1½ and 1½ inch square Cast Steel, 21 cents per pound.
- SARGENT & Co., New York, Jan. 6, 1864: 1 dozen Cattle Ties, No. 17, \$3, 15 per cent. cash; Padlocks, No. 3 O. 55 cents, add 20 per cent.; Square Lanterns, \$4.50 per dozen.
- GEO. A. BERRY & Co., Pittsburgh, October 28: 8 x 10 Glass, \$3 per box.
- F. H. OLIPHANT, Pittsburgh, October 24: 1½ x ¾ Rivets, 6½ cents.
- LIVINGSTON MFG. COMPANY, New York, October 28: No. 1 Cross Cut Saws, 6½-foot, \$4.50 each, less 2½ and 5 per cent.
- DURBIN & RUSHER, agents Clifton Mill Company, New York, May 19: ½ x 2½ Carriage Bolts, \$7.60 per hundredweight, less 40 and 5 per cent.
- HENRY LAWRENCE & SONS, 80 John street, October 12: Manila Rope, 15½ cents.
- BARTON, ALEXANDER & WALLER, Importers, New York, October 12: Eley's E. B. Caps, 70 cents.
- WM. OOTHOUT, Importers of Iron and Steel, Cliff street, New York, October 21: 1½ x ¾ x ½ Iron at \$150 per ton.
- WILSON, HAWKSWORTH, ELLISON & Co., 74 John street, New York, September 26: W. H. E. & Co. Butcher Knives, J7845, \$1.75.
- BASSETT & MACE, 85 Beekman street, New York: No. 90 Masons' Line, \$1.10 per dozen.
- VAN NEST & HAYDEN, 79 Beekman street, New York, September 30: Four sides Lace Leather, \$2 per side.
- HEBERD, CROCKER & WILLERT, 17 Fulton street, New York: 1 dozen ½ bushel Measures, at \$5.40 per dozen.
- BEAM & MURRAY, 54 Cliff street, New York, October 23: 200 pounds 5-16 Chain, 9½ cents; 500 pounds ¾ Chain, 8½ cents; Peter Wright Anvils, 12½ cents; Wilkinson's Anvils, 11½ cents.
- HOLLY MFG. COMPANY, Lockport, N. Y., July 5: Clothes Line Reels, \$18 per dozen, 25 per cent. off; 1 cask Sad Irons, 4½ cents per pound.
- W. N. SEYMOUR & Co., 4 Chatham Square, New York, October 1: 1 dozen Razors, \$10.
- LIPPINCOTT & Co., Pittsburgh, Pa., October 5: Axes, 3¼ to 4¼, at \$12.50 per dozen.
- MORLEY-CAREY, proprietors Cleveland White Lead & Zinc Works, Cleveland, Ohio, October 2: 1000 pounds strictly pure White Lead, 10½ cents per pound.
- BRIDGES & LANE, 50 Cortlandt street, New York: A bill of railroad and car construction material, among which were 250 Bolts, 1½ x ¾, at \$6.00 per hundredweight.
- FAHNESTOCK, ALBEE & Co., Pittsburgh, July 21: 10 boxes 8 x 10 Glass, \$3 net; 10 boxes 10 x 14 Glass, \$3.50 net.
- ABRAHAM BUSSING, agent Ausable Horse Nail Company, 71 John street, New York, November 7: No. 8 Horse Nails, 26 cents per pound, 5 per cent. off cash; Horseshoes at \$7.25 per keg.
- READING HARDWARE COMPANY, Reading, Pa.: 200 sets Bed Fasteners, 8 cents per set net.
- J. S. & H. C. PROUTY, 3 Platt street, New York, October 1: 236 quarters Cook's Auger Bits, at 11 cents per quarter, \$25.96.
- S. H. RANSOM & Co., Albany, N. Y.: No. 6 common Cook Stoves, at \$12.50.
- POTTER & PARIS, Troy, N. Y., October 28: No. 9 Stove with Reservoir, \$19.50.
- CLAVLIN & SEXTON, Troy, N. Y., October 26: Hurd's Axes, 3¼, 4¼, \$12.50 per box, 5 per cent. off cash.
- M. GREGG, Rochester, N. Y., January 6: Chamfering Knives, \$1.25 each.
- LOCKPORT EDGE TOOL COMPANY, Lockport, N. Y., November 11: Carpenters' Adzes, \$18 per dozen, net cash.
- MCKNIGHT & Co., Pittsburgh, May 30: 1½ x ½ Iron, at 4½ cents.
- BANCROFT, REDFIELD & RICE, 177 Broadway, New York, October 22: 6 dozen Tipped Table Spoons, at \$6.50 per dozen, \$39, less 30 per cent.
- HAILMAN, RALM & Co., Pittsburgh, Pa., November 14: ¾ Octagon Steel, 19 cents per pound.
- A. L. HALSTEAD'S SON, Importer of Hardware, Metals, &c., 15 Platt street, New York, May 13: Sundry bill amounting to \$239.34, one item being 218 Copper Pits at 47½ cents per pound, net cash.
- JAMES WARD & Co., Niles, Ohio, December 21: 2000 pounds Nos. 12 and 14 Sheet Iron at 6½ cents; August 11: 1¼ x ¾ Bar Iron, at 4½ cents.
- WYANDOTTE ROLLING MILL COMPANY, Detroit, Mich: 1-inch Round Iron, at 6½ cents.
- DOWNES & Co., Seneca Falls, N. Y., September 1: No. 2 D. A. Force Pump, \$30 net; Clothes Line Reels, \$9 net.
- LIVINGSTON, COPLAND & Co., Pittsburgh, July 21: No. 16 Door Locks, \$17 per dozen, 10 per cent. off.
- BROWN, BONNELL & Co., Youngstown, Ohio, December 3: 10 to 30d. Nails at \$5; 3d. Nails at \$6.25.
- ADOLPHUS G. MANDELL, 232 Pearl street, New York: No. 1-B Furniture Varnish, at \$2.50 per gallon.
- R. L. BROWN & Co., Pittsburgh: ¾ x ¾ Iron, at 5 cents per pound.
- BLACK DIAMOND STEEL WORKS, Pittsburgh, Pa., September 14: Cast Steel, 18 cents per pound.
- TATHAM BROTHERS, 82 Beekman street, New York, September 26: Shot, at 11 cents per pound.

### John A. Gregg.

JOHN A. GREGG, a well-known Hardware salesman, has established himself as manufacturers' agent at Burlington, Iowa, representing direct manufacturers of Hardware and Hardware Specialties. He has issued a neat pamphlet giving a list of the companies represented by him, as follows: The Adams Company, the Irwin Auger Bit Company, Benbow-Brammer Mfg. Company, the American Rolling Mill Company, the American Steel Roofing Company, F. D. Kees, O. P. Schriver & Co., Ellis & Lessig Steel & Iron Company, Kahoka Flue Stop Company, the Warren Axe & Tool Company, Lawrence Bros., Black Silk Stove Polish Works, the E. D. Clapp Mfg. Company, Hay-Budden Mfg. Company, the Sandage Steel Skein Company, Austin Foundry Company, and S. R. & I. C. McConnell. In each case a list of the products made by the several manufacturers is given.

### The Madden File Company.

THE MADDEN FILE COMPANY, Middletown, N. Y., who were organized in September last and purchased the plant of the Hogan Boiler Company of that city, have since that time added a brick addition, 160 feet long and 40 feet wide, for a forging and grinding department, and have also installed a large amount of the latest improved File manufacturing machinery. They now have the entire plant in operation, with a capacity of 300 dozen per day, and are turning out a superior grade of Files and hand punched Horse Rasps. The officers of this company are as follows: President, F. M. Madden, formerly secretary and treasurer of the Eagle File Company; secretary and treasurer, David Kutner, formerly with the American Swiss File & Tool Company, and general manager, Wm. Shannon, formerly superintendent of the Eagle File Company.

At the annual meeting of the stockholders of the Morris Hardware Company, Youngstown, Ohio, held on Monday, February 11, the following Board of Directors were elected: L. E. Cochran, Frank Hitchcock, H. M. Garlick, J. H. Morris, W. J. Whitworth, W. H. Park and B. H. Coe. The directors elected the following officials: H. M. Garlick, president; Frank Hitchcock, vice-president; J. H. Morris, general manager; Mark R. Morris, assistant general manager; W. J. Whitworth, secretary; B. H. Roe, treasurer.



## Among the Hardware Trade.

Morgan & Ehlers, Hardware and Farm Implement dealers, Parkersburg, Iowa, have sold out to J. E. Ebling & Co.

The establishment of the Shacklett-Thomas Hardware Company, Fulton, Ky., was recently burned out. The concern are rebuilding and expect to have their new quarters ready by early June. They are wholesalers and retailers of Hardware, Stoves, Tinware, Agricultural Implements, Sporting Goods, &c.

Keim & McMillan Hardware Company, Carthage, Mo., have been incorporated with a capital stock of \$30,000. They have a three-story building, 26 x 200 feet, and carry a large stock of Hardware, Shelf and Heavy Stoves, Tinware, Sporting Goods, &c., at wholesale and retail.

D. H. Brinkman has succeeded the Boyden Hardware Company, Boyden, Iowa.

Pattie & Turrell, Harris, Kan., have added Harness and Farm Implements to their line.

H. N. Fordham has sold out his Hardware business in Wyoming, Iowa.

The business of General Hardware, Plumbing and Tinsmithing in Sing Sing, N. Y., heretofore carried on by Jno. E. Barlow, is now being conducted under the style of Barlow & Kipp, Leonard P. Kipp, late of the First National Bank, having been admitted to partnership.

Selby Hardware & Implement Company, Stillwater, O. T., have sold out to Stillwater Hardware & Lumber Company, who will continue the Shelf Hardware, Farm Implement, Vehicle and Lumber business.

D. C. Olive, dealer in Shelf Hardware, Stoves and Tinware, Furnaces, &c., formerly at Washington, Iowa, has removed to Sigourney.

Ryan & Co., Fort Dodge, Iowa, have incorporated under the style of Ryan Implement & Hardware Company.

Lawrence Hardware & Implement Company have succeeded Engart & Lawrence at Gallatin, Mo.

The partnership in Allentown, Pa., between William F. Neff and Joseph A. Best, under the style of Neff & Best, has been dissolved. The business is now being conducted by Mr. Neff under his own name.

Harry B. Menefee has succeeded Geo. W. Briggs in the Hardware business in South Omaha, Neb.

R. A. Jones has been succeeded in the Hardware and Stove business in Callao, Mo., by Jones & Pool.

Howard W. Dippery has lately opened in business at 755 North Tenth street, Reading Pa. Mr. Dippery handles Builders' and Shelf Hardware, and advises us that he is doing a nice trade.

Redd & Rummel are successors to F. G. Redd in the Hardware, Stove and Agricultural Implement business in Convoy, Ohio.

The Hardware firm of Lewis & Goodnoe, Schenectady, N. Y., have dissolved partnership. Goodnoe & Teller are successors.

About \$200 worth of Pocket Knives, Shears, Scissors, &c., was stolen from the establishment of Montana Hardware Company, Butte, Mont., a short time since.

William A. Fuller & Co., wholesale and retail dealers in Hardware, Agricultural Implements, Sporting Goods, &c., Clinton, Mass., have opened a store at Leominster, which will be managed by W. T. Gavin, who has lately been admitted to partnership.

Hawk Bros. have succeeded Hawk, Lane & Co., Hardware, Stove, Farm Implement and Sporting Goods merchants, Doniphan, Neb.

A. B. M. Walker has purchased his partner's interest in the Hardware business at Corsicana, Tex., and will continue at the old stand under his own name.

Armstrong & Rider have succeeded W. H. Cox in the retail Hardware, Agricultural Implement, Stove, Heating and Plumbing business in Union, Iowa. The new firm have added to the stock thus acquired.

Wills & Hulen have succeeded Wills & Henry, Hardware, Stove and Wagon merchants, Centralia, Mo.

Carlisle, Beatty & Co. are successors to A. E. Carlisle & Co. in the Hardware business at Kaufman, Tex.

T. C. Henry has purchased an interest in the Hardware and general merchandise business of S. E. Hudson, San Saba, Texas, and the style has been changed to T. C. Henry & Co.

S. M. Huston has bought the Hardware and Stove business formerly conducted by Garide & Wax, Blanchard, Iowa. He has increased the stock materially.

M. S. McCullough has purchased the interest of John Payne in the Hardware, Stove, Agricultural Implement, Sporting Goods and Harness business of Payne & Butterfield, Mulvane, Kan., and the style is now Butterfield & McCullough.

Paul Bros. have lately embarked in business at Hagen, Wis., handling Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements, Stoves, &c.

L. B. Carlton & Co. have succeeded T. W. Carlton in the Hardware business in Alvin, Tex.

Geo. W. Young of Blaine, Maine, has removed his Hardware business to larger and more commodious quarters.

William E. Spinners has purchased the Hardware business of Lewis & Sargent, Osakis, Minn.

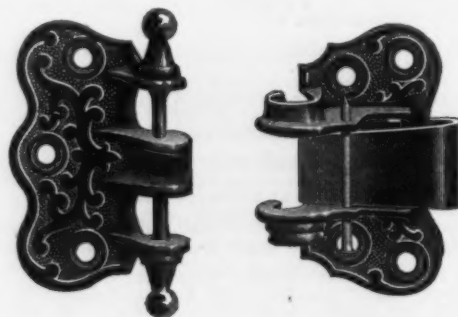
D. G. Fraser and P. T. B. Button of Franklinville, N. Y., have entered the Hardware, Stove and Farm Implement business at Gladwin, Mich., under the style of Fraser & Button.

U. G. Fowler & Co. are successors to D. W. Smith in the retail Hardware and Stove business in Huron, S. D.

F. M. Staples has disposed of his Hardware business in Canastota, S. D., to Ryan & Haden.

## Unhook Screen Door Hinge.

Hoffman Hinge & Foundry Company, 1174 Hamilton-street, Cleveland, Ohio, have put on the market the unhook screen door hinge here illustrated. Marked features of it are referred to as increased closing power, durability and a stationary pintle which obviates the

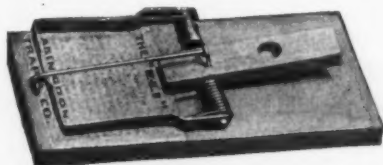


Unhook Screen Door Hinge.

necessity for right and left hinges. To remove a screen door fitted with this style of hinge the door is opened half way and a small nail is dropped into aligned holes in each hinge, when by closing the door it can be removed and put away. To hang the door the operation is reversed. As no tools are needed and no screws withdrawn even an unskilled domestic can either hang or unhang a door in a few minutes.

### Eli Mouse and Rat Trap.

The Abingdon Trap Company, Abingdon, Ill., makers of Diamond Joe mouse and rat traps, have brought out a trap called the Eli, under patent dated January 15, 1901. The trigger operates upon a pivot and, it is said, is therefore extremely sensitive. As will be seen in the illustration herewith, the release rod, when trap is set,



*Eli Mouse and Rat Trap.*

is held in place by the loose end engaging a staple which is firmly driven through the wood pedal and clinched on the under side. This construction also permits trap being set from the rear without danger to the user. The springs are made of the best grade of oil tempered wire and, being connected to the bow on both sides, provide an equality of tension and uniformity of stroke. The bow, which grips the animal, is made of stiff, flat steel which, it is stated, will not bend or twist out of shape. The little niche in the bow is a convenience which will be readily recognized, as it permits of the bow being easily taken hold of and reset. The wood base is made of well seasoned rock elm.

The Eli traps may be placed in the runway of a mouse or rat—i. e., next to wall or behind boxes, on shelves, at holes, &c., being adapted, it is claimed, for use either with or without bait. They are attractively packed in cartoons suitable for show case display. They are made in two sizes, No. 1 for mice, No. 2 for rats.

### Improved Rawhide Mallet.

The Brockton Mallet Company, Brockton, Mass., are offering an improved pattern Goddard rawhide mallet,



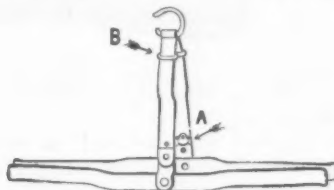
*Improved Rawhide Mallet.*

which is illustrated in the accompanying cut. The mallets are made with a face of rawhide composed of a number of rawhide disks tightly compressed by hydraulic power, and capped and backed with iron collars to make the required weight. It is stated that the mal-

lets are balanced perfectly, so that every blow is struck on the center of the rawhide. A patent clamping nut is used which prevents the rawhide from slipping, and this nut has a leather covering which prevents laceration of the hands when in use. The mallets are made to weigh from  $\frac{1}{2}$  to 30 pounds, and with straight or oval faced rawhide.

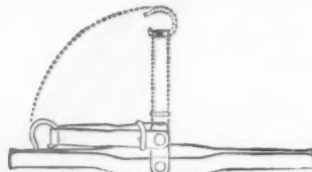
### The Setwell Folding Trousers or Skirt Hanger.

Illustrations are herewith given showing the Setwell folding trousers or skirt hanger made by the Mackie-Lovejoy Mfg. Company, 54 to 60 North Clinton street,



*Fig. 1.—Trousers or Skirt Hanger, Open.*

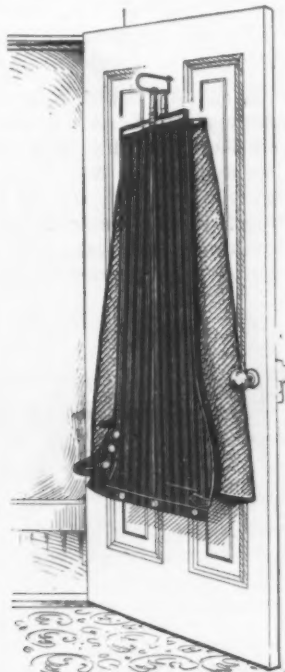
Chicago. Fig. 1 shows the hanger open, Fig. 2 shows it closed and Fig. 3 shows it in actual use. The clamps of the hanger are fastened together on the garment by a tightening loop which is locked in position by two washers on the inside of the upright of the hanger. The



*Fig. 2.—Trousers or Skirt Hanger, Closed.*

hanger is sold in sets, which include four hangers for trousers and skirts, four folding wire hangers for coats or jackets, two nickel plated shelf bars for coats or jackets and one door loop for trousers or skirts.

The Glen Rock Lifting-Jack Company, Glen Rock, Pa., expect to commence the manufacture of their patent



*Fig. 3.—The Setwell Folding Trousers or Skirt Hanger.*

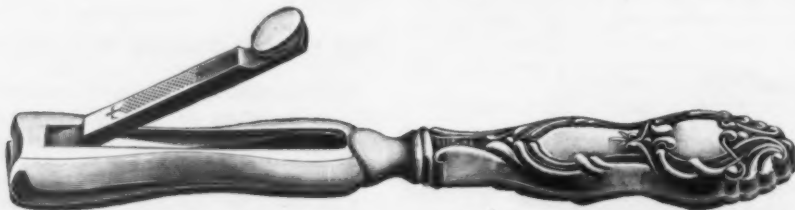
Atlas Jack, in a building which they have just completed, about February 25. The special feature of this jack is that the lever and lifting block are independent of the ratchet.



### The Gem Nail Clipper.

The H. G. Cook Company, Ansonia, Conn., are offering their new style of nail clipper, as herewith shown. The clipper is described as made from high grade steel finished in nickel, the jaws hardened and accurately

with most encouraging results in selling Fox razors, refer to one letter giving their customer's experience in guaranteeing quite a number of Fox razors. Only one of them came back and this was resold at the full price and proved satisfactory to the second buyer. Trade in razors is often extremely unsatisfactory be-



*The Gem Nail Clipper.*

ground. The clippers are mounted on sterling silver handles. The attractiveness of the clipper is especially referred to by the manufacturers.

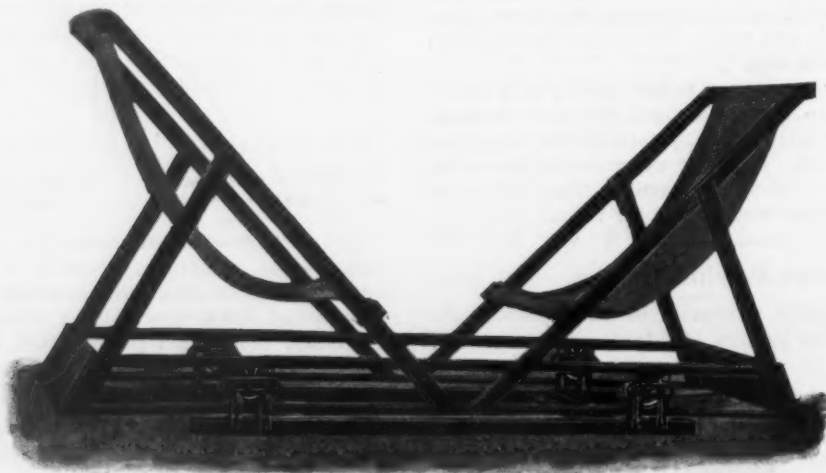
### Wright's New Lawn Coaster.

Geo. W. Wright, Lapel, Ind., is offering what he terms a lawn coaster, which is herewith illustrated. It is a new departure in lawn, veranda or sitting room chairs

cause the necessary guarantee proves a source of much trouble and is often abused.

### Cortis Pencil Sharpener Ruler.

Cortis Mfg. Company, Meriden, Conn., have just put on the market the Cortis combination pencil sharpener ruler, as here illustrated. In one end of the ruler is a file device,  $2\frac{1}{2}$  inches long, by means of which lead pen-



*Wright's New Lawn Coaster.*

or swings, running on antifriction rollers, for which a patent has just been granted. A stationary base rests on the ground or floor. To this base the antifriction roller racks are secured. Steel bars, which form a part of the frame work of the chairs, run on the rollers. A long, flexible spring is arranged at each end, making the backward and forward motion easy and smooth. The chairs are moved back and forth by the pressure of the

cils can be sharpened by laying the ruler flat on the desk, with the pencil in the V at the angle to be sharpened. The pencil is then drawn back and forth, bearing very lightly and turning it a little at each stroke. If the cutters get dull they can be reversed so as to give practically a new side, or new ones can be easily obtained. The ruler is 12 inches long, graduated in eighths, made of fine selected hard wood with brass cutting edge,



*Cortis Patent Pencil Sharpener Ruler.*

feet on the ground or floor, causing one spring to contract and the other to expand, so that at the end of the stroke the expanded spring starts the return motion. The coaster weighs 85 pounds.

The Fox Cutlery Company, Dubuque, Iowa, among many letters from their customers, who are meeting

and is varnished and highly polished. This novelty is put on the market as suitable for advertising purposes as well as for the general trade.

Mize Hardware Company, Independence, Mo., have been incorporated and have purchased the G. M. Nichol Hardware stock.

# Current Hardware Prices.

REVISED FEBRUARY 12, 1901.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. They apply to such quantities of goods as are usually purchased by retail merchants. Very small orders and broken packages of ten command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33½@33½@10% signifies that the price of the goods in question ranges from 33½ per cent. discount to 33½ and 10 per cent. discount.

**Cut Prices.**—In the present condition of the market there is a good deal of cutting of prices by the jobbing trade, whose quotations are often lower than those of the manufacturers.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE INDEX SUPPLEMENT (May 3 1900), which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

## Adjusters Blind—

Domestic, 7 doz. \$3.00...33½@33½@10%  
North's... 9½@9½@10%  
Zimmerman's—See Fasteners, Blind.

### Window Stop—

Ives' Patent... 25¢5¢  
Taplin's Perfection... 30¢

**Ammunition**—See Caps, Cartridges, Shells, &c.

## Anvils—American—

Eagle Anvil... 7½@7½@  
Hay-Budden, Wrought... 9@9@  
Horsehoe brand, Wrought... 9½@9½@  
Samson... 7@7@  
Trenton, Wrought... 8½@8½@

### Imported—

Armitage's Mouse Hole... 8½@8½@  
Peter Wright's... 9@9@

## Anvil, Vise and Drill—

Millers Falls Co., \$18.00... 20%

## Apple Parers—See Parers, Apple, &c.

## Aprons, Blacksmiths'—

Hull & Hoyt Co.  
Lots of 1 doz... 25¢  
Sutcliffe & Co. Lots... 20¢  
Lots of 3 doz... 30%

## Augers and Bits—

Com. Double Spur... 70¢5¢  
Boring Machine Augers... 60¢10¢10¢70¢5¢

Car Bits, 12-in. twist... 60¢10¢10¢70¢5¢

Jennings' Pattern:  
Auger Bits... 50¢10¢5¢60¢

Ford's Auger and Car Bits... 40¢10¢40¢10¢10¢

Forstner Pat. Auger Bits... 25¢

C. E. Jennings & Co.  
No. 10 Ext. Lip. E. Jennings' List... 40%

No. 30, R. Jennings' List... 50%

Russell Jennings'... 25¢10¢2½¢

L'Honniedieu Car Bits 15¢10¢15¢10¢5¢

Pugh's Black... 20%

Pugh's Jennings' Pattern... 35%

Snell's Auger Bits... 60%

So. Ill. Bell Hangers' Bits... 50%

Snell's Car Bits, 12-in. twist... 60%

Wright's Jennings Bits (R. Jennings' List)... 50%

## Bit Stock Drills—

Standard List... 65¢5¢70%

## Expansive Bits—

Clark's small, 1½; large, 3½... 50¢10%

Lavigne's Clark's Pattern, No. 1... 70%

Doz., 24; No. 2, 18... 50¢10%

C. E. Jennings & Co., Steer's Pat... 35%

Swan's... 60%

## Gimlet Bits—

Common Double Cut, gro. \$2.00@2.75

German Pattern... \$2.35@4.50

Double Cut, makers' lists... 50¢5¢10%

## Hollow Augers—

Bonney Pattern, per doz. \$11.00@12.50

AUCS... 25¢10%

New Patent... 25¢10%

Universal... 20%

## Ship Augers and Bits—

Ford's... 40%

Swell's... 40%

C. E. Jennings & Co.  
L'Honniedieu's... 15¢10%

Watrous... 40%

## Awl Hafts, See Hafts, Awl.

## Awls—

Brad Awls:  
Handled... gro. \$2.75@3.10

Unhanded, Shouldered, gro. 65¢@60¢

Unhanded, Patent... gro. 60¢@70¢

Peg Awls:  
Unhanded, Patent... gro. 31¢@35¢

Unhanded, Shouldered, gro. 65¢@70¢

Scratch Awls:  
Handled, Common... gro. \$3.50@4.00

Handled, Socket... \$11.50@12.00

## Awl and Tool Sets—See Sets, Awl and Tool.

## Axes—

First Quality, best brands... \$5.25@6.50

First Quality, other brands... \$5.00@6.25

Jobbers' Special Brands:  
Good Quality... \$5.00@5.50

Best Quality... \$5.25

Cheap, Handled Axes... \$5.50@5.75

Beveled, add 5¢ doz.

## Axe Grease—See Grease, Axe.

## Axles—Iron or Steel.

Concord, Loose Collar... 4½¢

Concord, Solid Collar... 5¢

No. 1 Common... 3¢5¢4¢

No. 1½ Com. New Style... 3½¢4¢

No. 2, Solid Collar... 3½¢4¢

Nos. 7, 8, 11 to 14... 75¢10%

Nos. 15 to 18... 60¢10¢10%

Nos. 19 to 22... 50%

## Boxes, Axle—

Common and Concord, not turned... 15. 50

Common and Concord, turned... lb. 10

Half Patent... lb. 90

## Balances—Sash—

Caldwell new list... 50%

Polman's... 60%

## Spring—

Spring Balances... 50¢50¢10%

Chatillon's Light Spg. Balances... 40¢10%

Chatillon Straight Balances... 40%

Chatillon Circular Balances... 50%

Chatillon's Large Dial... 40%

Pelouze... 50%

## Barb Wire—See Wire, Barb.

## Bars—Crow

Steel Crowbars, 10 to 40 lb., per lb. 3@3½¢

## Beams, Scale—

Scale Beams, List Jan. 12, '83... 30¢10%

Chatillon's No. 1... 30%

Chatillon's No. 2... 40%

## Beaters—Egg—

Standard Co.:  
No. 6 Steel Handle Dover... \$6.50

No. 10 Cast Handle Dover... \$8.00

No. 10 Steel Handle Dover... \$8.00

No. 15 Extra Heavy Steel Handle... \$15.00

Rival... \$11.00

Taplin Mfg. Co.:  
No. 50 Small Family size... \$6.50

No. 100 Regular Family size... \$8.00

No. 102 Regular Family size, tinned... \$9.50

No. 150 Large Family size... \$15.00

No. 152 Large Family size, tinned... \$17.00

Lyon's Standard size... \$1.75

Wonder (S. S. & Co.)... \$7.50

## Bellows—

Blacksmith, Standard List... 70¢70¢10%

C. E. Jennings & Co., Blacksmith... 60¢10%

C. E. Jennings & Co., Hand... 35%

## Blacksmiths—

Inch... 30 33 35 38 33 40

Eac 1... \$2.50 3.75 4.25 4.80 5.35 6.15

Extra Length:  
Each... \$4.00 4.55 5.10 5.60 6.10 7.50

## Molders—

Inch... 9 10 11 12 14 16

Doz... \$6.75 7.35 8.50 9.50 12.00 15.50

## Hand—

Inch... 6 7 8 9 10 12

Doz... \$3.75 4.25 4.50 5.00 5.75 6.75

## Bells—Cow—

Ordinary goods... 75¢5¢@75¢10%

High grade... 70¢70¢10%

Jersey... 75¢10%

Texas Star... 60¢10%

## Door—

Abbe's Gong... 45%

Barton Gong... 55%

Horne, R. & E. Mfg. Co.'s... 55¢10%

Lever and Pull, Sargent's... 30¢10¢10%

## Hand—

Hand Bells, Polished... 60¢@80¢10%

White Metal... 55¢55¢10%

Nickel Plated... 30¢50¢10%

Swiss... 60%

Silver Chime... 30¢@35¢10%

## Miscellaneous—

Farm Bells... lb. 2¢@4¢

Steel Alloy Church and School... 50¢10¢5¢90%

Wilmet & Hobbs Mfg. Co., Gongs... 70%

## Belting—Rubber—

Common Standard... 75¢75¢10%

Standard... 70¢70¢10%

Extra... 60¢10¢5%

High Grade... 0¢10¢50¢10¢5%

Boston Belting Co.:  
Seamless Stitched, Imperial... 45%

Watson... 50¢5%

Nisgara... 80¢5%

## Leather—

Extra Heavy, Short Lap... 50¢10¢60%

Regular Short Lap 60¢10¢60¢10¢5%

Standard... 60¢10¢10¢70¢5%

Light Standard... 70¢70¢10%

## Cotton—

Rossendale-Reddaway B. & H. Co.:  
Sphinx Brand... 80¢10%

Durable Brand... 70%

## Bench Stops—See Stops, Bench

## Benders and Upsetters,

## Tire—

Green River Tire Benders and Upsetters... 30%

Stoddard's Lightning Tire Upsetters... 40¢50%

## Bicycle Goods—

John S. Lang's Son's 1899 list:  
Chain... 50%

Paris... 50%

Spokes... 50%

Tubes... 60%

## Bits—

Auger, Gimlet, Bit Stock Drills, &c.—  
See Augers and Bits.

## Bit Holders—See Holders.

## Blind Adjusters—See Ad-

justers, Blind.

## Blind Fasteners—See Fas-

teners, Blind.

## Blind Staples—See Staples,

Blind.

## Blocks—Tackle—

Common Wooden... 70¢70¢10%

Cleveland Steel... 50¢10¢60¢10%

Ford's Star Brand Self Lubricating... 50¢10%

Hollow Steel, Ford's Pat. Star Brand... 50¢10%

Junior... 30%

Stewart's Novelty, Mal. Iron... 50%

See also Machines, Hoisting.

## Boards, Stove—

Zinc, Crystal, &c... 50¢10%

## Boils—

Carriage, Machine &c.—  
Common, list Jan. 30, '95... 70¢10%4¢

Norway Iron, \$3.00, list Oct. 7, '94... 75¢75¢10%

Phila. Eagle, \$3.00 list May 26, '94... 80¢80¢10%

Bill Ends, list Jan. 30, '95... 70¢10¢5¢4¢

Machine, list Oct. 1, '99... 70¢10¢5¢4¢

Machine with C.P., C. & T. Nuts... 70%

NOTE—The rapid advances in manu-

facturers' prices enable the jobbers to cut

prices freely.

## Door and Shutter—

Cast Iron Barrel, Round Brass

Knob:  
Inch... 3 4 5 6 8

Per doz... \$0.25 30 45 57 30

Cast Iron Spring Foot:  
Inch... 6 8 10

Per doz... \$1.00 1.25 1.75

Cast Iron Chain, Flat, Japanned:  
Inch... 6 8 10

Per doz... \$0.35 1.20 1.50

Cast Iron Shutter, Brass Knobs:  
Inch... 6 8 10

Per doz... \$0.60 30 12

Wrought Barrel Brass Knob:  
Inch... 3 4 5 6 8

Per doz... \$0.44 50 61 70 1.33

Wrought Barrel... 70¢10¢75¢5%

Wrought... Bronzed... 10¢5¢50¢10%

Wrought Flush B. K... 50¢10¢60¢10%

Wrought Shutter... 40¢10¢10¢60¢5%

Wrought Square Neck... 50¢50¢10%

Wrought Sunk... 50¢50¢10%

Ives' Patent Door... 60%

## Stove and Plow—

Plow... 60¢10¢10%

Stove... 77%

## Tire—



### Carpet Stretchers— See Stretchers, Carpet.

### Cartridges—

B. B. Caps, Con., Ball Sgd.	\$1.90
B. B. Caps, Round Ball.	\$1.10 @ 1.18
Blank Cartridges:	
38 C. F.	\$5.50
38 C. F.	\$7.00
38 cal. Rim.	\$1.50
38 cal. Rim.	\$2.75
Central Fire	
Pistol and Rifle	15c
Primed Shells and Bullets	15c
Rim Fire Sporting	50c
Rim Fire Military	15c

### Casters—

Bed	70c @ 70c 10c
Plate	75c @ 75c 10c
Philadelphia	75c @ 75c 10c
Boss	70c 10c
Boss Anti-Friction	70c 10c
Martin's Patent (Phoenix)	45c
Payson's Anti-Friction	70c 10c
Standard Ball Bearing	45c
Tucker's Patent, low list	30c

### Cattle Leaders— See Leaders, Cattle.

### Chain—

American Coil, Less than Casts:	
3-16 1/4 5-16 7-16 1-2 3-16	9-16
7-30 5-40 1-2 3-5 3-40 3-30 3-25	
3-25 3-30 3-40 cents per lb.	
Cash lots deduct 85c per 100 lb.	
German Coil, list July 26, '97, 60c @ 10c	
German Hailer Chain, list July 26, '97	60c @ 10c
Traces, Western Standard: 100 pair	
6-1/2-8-3, Straight, with ring	\$36.00
6-1/2-8-3, Straight, with ring	\$27.00
6-1/2-8-3, Straight, with ring	\$31.00
6-1/2-8-3, Straight, with ring	\$35.00
Add 2c per pair for Hooks.	
Twist Traces 2c per pair higher than	
Straight Link	
Trace, Wagon and Fancy Chains	
Eastern list	60c @ 60c 10c
Jack Chain, list July 10, '98	
Iron	60c @ 60c 10c
Brass	60c @ 60c 10c
Safety Chain	70c @ 70c 10c
Gal. Pump Chain	1b 4 1/2 @ 4 1/2
Covert Sd. Works	
Breast, Hitching and Rein Chains	50c
Covert Mfg. Co.	
Breast	35c @ 35c 2c
Halter	35c @ 35c 2c
Rein	35c @ 35c 2c
Stallion	35c @ 35c 2c
Onella Community	
Eureka Coll and Halter	60c @ 60c 10c
Niagara Coll and Halter	60c @ 60c 10c
Niagara Cow Ties	45c @ 45c 10c
Am. Coll and Halter	60c @ 60c 10c
Am. Cow Ties	35c @ 35c 10c
Wire Goods Co.	
Dog Chain	60c
Universal Dbl-Jointed Chain	45c
Chalk—(From Jobbers.)	
Carpenters', Blue	gro. 15c
Carpenters', Red	gro. 15c
Carpenters', White	gro. 35c
See also Crayons.	

### Chalk Lines—See Lines.

### Checks, Door—

Bardley's	40c @ 40c 10c
Columbia	60c @ 60c 10c
Kolpe	60c @ 60c 10c

### Chests, Tool—

American Tool Chest Co.	
Boys' Chests, with Tools	50c
Youths' Chests, with Tools	40c
Gentlemen's Chests, with Tools	30c
Farmers', Carpenters', etc., Chests	30c
with Tools	30c
Machinists' and Pipe Fitters' Chests	30c
Empty	30c
C. E. Jennings & Co.'s Machinists' Tool Chests	30c @ 30c 10c

### Chisels—

Socket Framing and Firmer	
Standard List	70c @ 70c 10c
Buck Bros.	30c
Charles Buck	30c
C. E. Jennings & Co. Socket Firmer	30c
No. 10	60c @ 60c 10c
C. E. Jennings & Co. Socket Framing	60c @ 60c 10c
No. 15	60c @ 60c 10c
Swan's	70c @ 70c 10c
L. & J. White	30c @ 30c 10c

### Tanged—

Tanged Firmers	40c @ 40c 10c
Buck Bros.	30c
Charles Buck	30c
C. E. Jennings & Co. Nos. 191, 181	25c
L. & J. White, Tanged	25c @ 25c 10c

### Cold—

Cold Chisels, good quality	1b. 14c @ 14c
Cold Chisels, fair quality	1b. 12c @ 12c
Cold Chisels, ordinary	1b. 8c @ 8c

### Chucks—

Beach Pat., each \$3.00	30c
Rhinier Patent Chucks	
Combination Lathe Chucks	40c
Drill Chucks, Patent and Standard	30c
Drill Chucks, New Model	20c
Independent Lathe Chucks	40c
Improved Planer Chucks	20c
Universal Lathe Chucks	40c
Face Plate Tool Co.	35c
Standard Tool Co.	
Improved Drill Chuck	45c
Union Mfg. Co.	
Combination	40c
Car Drill	30c
Geared Scroll	40c
Independent	40c
Union Drill	30c
Universal	40c
Face Plate Jaws	35c

### Clamps—

Adjustable, Hammers	20c @ 20c 10c
Cabinet, Sargent's	40c @ 40c 10c
Carriage Makers', P. S. & W. Co.	40c @ 40c 10c
Carriage Makers' Sargent's	30c @ 30c 10c
Best, Parallel	30c @ 30c 10c
Lineman's, Utica Drop Forge & Tool Co.	40c
Saw Clamps, see Vices, Saw Pliers.	

### Cleaners Walk—

Star Socket, All Steel	1 doz. \$4.00 net
Star Shank, All Steel	1 doz. \$3.75 net
W. & C. Spank, All Steel	7 1/2 in. doz., \$3.35; 8 in., \$3.40; 8 1/2 in., \$3.50.

### Cleavers, Butchers'—

Foster Bros.	30c
New Haven Edge Tool Co.'s	40c @ 10c
Yayette R. Plumb	33 1/2 in. 10c @ 10c 10c
P. S. & W.	30c @ 30c 10c
L. & J. White	30c @ 30c 10c

### Clippers—

Chicago Flexible Shaft Company	
Handy Toilet	1 doz. \$7.30
Mascotte Toilet	1 doz. \$3.40
Monitor Toilet	1 doz. \$9.00
Stewart's Patent	1 doz. \$10.00

### Clips, Axle—

Eagle and Superior 1/4 and 5-16 inch.	70c @ 70c 10c
Norway, 1/4 and 5-16 inch	70c @ 70c 10c

### Clothes and Netting, Wire

### Cocks, Brass—

Hardware list (Globe, Kerosene, Racking, etc.)	65c @ 10c
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### Coffee Mills—See Mills, Coffee.

### Collars Dog—

Brass, Pope & Stevens' list	40c
Embossed, Gilt, Pope & Stevens' list	30c @ 10c
Leather, Pope & Stevens' list	40c

### Compasses Dividers, &c.

Ordinary Goods	70c @ 70c 10c
Bemis & Cail Hdw. & Tool Co.	
Dividers	55c
California, Call's Patent Inside	55c
California, Double	55c
California, Inside or Outside	55c
California, Wing	60c
Compasses	50c
J. Stevens A. & T. Co.	35c @ 10c

### Conductor Pipe, Galvanized—

Southern...	75c @ 75%	75%
S. Western.	75%	70c @ 10c @ 2 1/2%
Terms, 25 for cash.		
See also Eave Trough and Elbows		
<b>Coolers. Water—</b>		

### Coolers, Water—

Labrador	11.50 14.00 17.50 20.00
8 gal.	
10 gal.	
12 gal.	
14 gal.	
16 gal.	
18 gal.	
20 gal.	
22 gal.	
24 gal.	
26 gal.	
28 gal.	
30 gal.	
32 gal.	
34 gal.	
36 gal.	
38 gal.	
40 gal.	
42 gal.	
44 gal.	
46 gal.	
48 gal.	
50 gal.	
52 gal.	
54 gal.	
56 gal.	
58 gal.	
60 gal.	
62 gal.	
64 gal.	
66 gal.	
68 gal.	
70 gal.	
72 gal.	
74 gal.	
76 gal.	
78 gal.	
80 gal.	
82 gal.	
84 gal.	
86 gal.	
88 gal.	
90 gal.	
92 gal.	
94 gal.	
96 gal.	
98 gal.	
100 gal.	

### Coopers' Tools—

See Tools, Coopers'.	
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### Cord—Sash—

Braided, Drab	1b. 25c
Braided, White, Common	1b 17 1/2 @ 15c
Cable Laid Italian	1b. A, 18c; B, 16c
Common India	1b. 9 @ 9 1/2c
Coiled Sash Cord, Twisted	1b. 10c
Patent Russia	1b. 12 1/2 @ 13c
Cable Laid Russia	1b. 13 1/2 @ 14c
India Hemp, Braided	1b. 14 @ 15c
Patent India	1b. 10 @ 12c
Pearl Braided, cotton	1b. 11 @ 12c
Massachusetts, White	1b. 12 @ 13c
Massachusetts, Dab	1b. 20 1/2 @ 21c
Eddystone Braided Cotton	1b. 18c
Harmony Cable Laid Italian	1b. 18c
Crown, Solid Braided White	1b. 18c
Braided, Giant, White	1b. 17c
Peerless	
Cable Laid Italian	14c
Cable Laid Russian	14c
Cable Laid India	12c
Braided India	12c
Phonix, White	15c
Samson	19c
Braided, Drab Cotton	1b. 22 1/2 @ 23c
Braided, Indian Hemp	1b. 22 1/2 @ 23c
Braided, Linen	1b. 24c
Braided, White Cotton, Spot	1b. 28 1/2 @ 29c

### Silver Lake—

A quality, Drab, 40c	15c
A quality, White, 35c	15c
B quality, Drab, 35c	15c
B quality, White, 30c	15c
Indian Hemp, 40c	15c
Linen, 57 1/2c	15c

### Wire, Picture—

Braided or Twisted	85c @ 85c 10c
Note.—There is a good deal of confusion in lists, some using old list and others the new list.	

### Corn Knives and Cutters

See Knives, Corn.	
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### Corn Planters—

See Planters, Corn	
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### Crackers, Nut—

Little Giant	1 gr. \$34.00
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### Cradles—

Cradles	50c
White Round Crayons, gross 5 1/2 @ 60c	
Cases, 100 gro., \$5.00, at factory.	

### Crayons—

D. M. Stewart Mfg. Co.	
Metal Workers' Crayons, gr. \$2.50	
Soapstone Pencils, round, flat or square	gr. \$1.50
Rolling Mill Crayons	gr. \$2.50
Railroad Crayons (composition)	gr. \$2.00
See also Chalk.	

### Creamery Pails—See Pails.

### Crooks, Shepherds'—

Fort Madison, Heavy	1 doz. \$7.00
Fort Madison, Light	1 doz. \$6.50

### Crow Bars—See Bars, Crow.

### Cultivators—

Victor Garden	1 doz. \$10.00
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### Cutlery, Table—

"Gross Goods," list Jan. '01, net @ 5%	
Extra 10% to purchasers of \$250 worth in six months.	

### Cutters—Glass—

Smith & Hemmingsway Co.	30c
Meat	
Hale's, Nos. 11 & 11 1/2	15c @ 15c 10c
Per doz.	\$10.80 13.80 18.00

### American—

Nos.	1 2 3 4 5 6 7 8 9 10 11 12
Each	\$5 \$7 \$10 \$25 \$50 \$100
Connecticut	
Nos.	0 1 2 3 4 5 6 7 8 9 10 11 12
Each	\$1.75 2.25 3.00 5.00 8.00 12.00 15.00 20.00 25.00 30.00 35.00 40.00
Zapruder	
Nos.	1 2 3 4 5 6 7 8 9 10 11 12
Each	\$3 \$3 \$2.50 \$4 \$6 \$8 \$10 \$12 \$15 \$18 \$20 \$25
Dixon's	
Nos.	1 2 3 4 5 6 7 8 9 10 11 12
Each	\$14.00 \$17.00 \$19.00 \$30.00 \$35.00 \$40.00 \$45.00 \$50.00 \$55.00 \$60.00 \$65.00 \$70.00
Home No. 1	1 doz. \$22.75
Little Giant	
Nos.	305 310 312 340 322
Each	\$55.00 \$48.00 \$44.00 \$71.00 \$68.00
Sterling	
Nos.	1 2 3 4 5 6 7 8 9 10 11 12
Each	\$1.00 \$1.25 \$1.50 \$2.00 \$2.50 \$3.00 \$3.50 \$4.00 \$4.50 \$5.00 \$5.50 \$6.00
Miles Challenge	1 doz. \$5.00 @ 5c 10c
Nos.	1 2 3 4 5 6 7 8 9 10 11 12
Each	\$22.00 \$30.00 \$40.00 \$40.00
New Triumph No. 605	1 doz. \$24.00
Woodruff's	
Nos.	1 2 3 4 5 6 7 8 9 10 11 12
Each	\$15.00 \$18.00
Chadborn's Smoked Beef Cutter	1 doz. \$80.00
Enterprise Beef Shavers	1 doz. \$25.00 @ 30c

### Saw and Kraut—

Henry Dison & Sons:	
Saw	1 doz. \$10.00
Kraut Cutters 24 x 7, 28 x 8, 30 x 9, 32 x 10	40c
Kraut Cutters 36 x 12, 40 x 12	40c
Tucker & Dorsey Mfg. Co.:	
Kraut Cutters	40c
Saw Cutters, 1 Knife, 1 gr.	\$19.00 @ 20c
Saw Cutters, 2 Knife, 1 gr.	\$39.00 @ 40c

### Tobacco—

All Iron, Cheap	1 doz. \$1.50 @ 1.50
Enterprise	1 doz. \$1.50 @ 1.50
National	1 doz. \$1.50 @ 1.50
Sargent's	1 doz. \$1.50 @ 1.50

### Washer—

Appleton's	1 doz. \$18.00
Bonney's	1 doz. \$18.00

### Diggers, Post Hole, &c.—

Dalby Post Hole Auger	per doz. \$10.00
Iwan's Improved Post Hole Auger	40c
Iwan's Perfection Post Hole Auger	40c
Kohler's Universal	1 doz. \$14.00
Kohler's Little Giant	1 doz. \$15.00
Kohler's Hercules	1 doz. \$12.00
Kohler's Invincible	1 doz. \$10.00
Kohler's Rival	1 doz. \$9.00
Kohler's Pioneer	1 doz. \$9.00
Never-Break Post Hole Diggers	1 doz. \$24.00
Samson	1 doz. \$31.00

### Dividers—See Compasses.

### Dog Collars—See Collars, Dog.

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Wire, Brown & Sharpe's.....25¢  
Wire, Morse's.....25¢  
Wire P. S. & W. Co.....10¢10¢25¢

**Cimlets—**

Nail, Metal, Assorted, gro. \$1.40@1.75  
Spike, Metal, Assorted, gro. \$5.00@5.50  
Nail, Wood Handled, Assorted,  
gro. \$4.00@4.25  
Spike, Wood Handled, Assorted,  
gro. \$5.00@5.25

**Class, American Window**

Jobbers' List, Sept. 1, 1900.  
Small lots from store:  
Single and Double Strength, all  
sizes.....35¢5¢  
10% to be added on all first quality,  
both Single and Double.

**Glue—Liquid, Fish—**

List A, Bottles or Cans, with Brush.  
37½¢@50¢  
List B, Cans (½ pts., pts., qts.)  
33¢@1.15¢  
List C, Cans (½ gal., gal.)  
25¢@1.45¢

**Glue Pots—See Pots, Glue.****Grease, Axle—**

Common Grade.....gro. \$5.00@6.00  
Dixon's Everlasting.....10¢10¢15¢  
Dixon's Everlasting, in bxs., 2 doz. 1 b.  
\$1.20; 2 b. \$2.00

Snow Flake:  
1 qt. cans, per doz. \$2.00; 2 qt., \$3.20;  
1 gal. cans, per doz. \$6.00; 2 gal.,  
\$16.00; 5 gal. \$24.00

**Grindstone Fixtures—**

See Fixtures, Grindstone.

**Guards, Snow—**

Cleveland Wire Spring Co.:  
Galv. Steel 1000.....\$9.00  
Copper 1000.....\$18.00

**Gun Powder—See Powder.****Hack Saws—See Saws.****Hafts, Awl—**

Peg Patent, Leather Top.....\$1.20@1.25  
Peg Patent, Plain Top.....\$3.50@3.75  
Sewing, Brass Ferrule.....\$1.50@1.60  
Saddlers', Brass Ferrule.....\$1.35@1.45  
Peg, Common.....\$1.35@1.35  
Brad, Common.....\$1.50@1.75

**Halters and Ties—**

Covert Mfg. Co., Web.....45¢25¢  
Covert Mfg. Co., Jute Rope.....45¢25¢  
Covert Mfg. Co., Sisal Rope.....30¢25¢  
Covert's Saddlery Works, 98 list, Wb.....60¢10¢  
Covert's Saddlery Works, Leather 80¢10¢  
Covert's Saddlery Works, Jute.....60¢5¢  
Covert's Saddlery Works, Sisal.....60¢  
Covert's Saddlery Works, Manila.....60¢5¢  
Covert's Saddlery Works, Cotton.....70¢

**Hammers—**

Handled Hammers—  
Heller's Machinists.....50¢50¢5¢  
Heller's Farmers.....50¢50¢5¢  
Magnetic Tack, Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10,  
11, 12, 13, 14, 15, 16, 17, 18, 19, 20,  
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**Ladies—Melting—**

L. & G. Mfg. Co. .... 60¢  
P. S. & W. .... 40¢@10¢  
Reading ..... 50¢@10¢  
Sargent's ..... 40¢@40¢@10¢

**Lanterns—Tubular—**

Regular Tubular ..... doz. \$5.50@5.60  
Side Lift Tubular ..... doz. \$4.75@5.25  
Square Lift Tubular ..... doz. \$4.75@5.25  
Other Styles ..... 60¢@10¢@10¢@10¢

**Bull's Eye Police—**

No. 1, 2 1/4 inch ..... \$5.60  
No. 2, 3 inch ..... \$4.00

**Latches, Thumb—**

Roggin's Latches ..... doz. \$2@3.30

**Lawn Mowers—**

See Mowers, Lawn.

**Leaders, Cattle—**

Small ..... doz. 50¢; large, 55¢  
Covert Mfg. Co. .... 45¢@25¢

**Lemon Squeezers—**

See Squeezers, Lemon.

**Lifters, Transom—**

Solid Grip, Payson Mfg. Co. .... 80¢  
R. & E. .... 45¢

**Lines—**

Wire Clothes, Nos. 18 19 20  
100 feet ..... \$3.20 2.00 1.65  
75 feet ..... \$1.80 1.70 1.30

**Cassan Mills—**

Crown Solid Braided Chalk ..... 39¢@45¢  
Mason's, No. 0 to No. 5 ..... 39¢@45¢  
Samson Cordage Works:  
Solid Braided Chalk, No. 0 to 3 ..... 40¢  
Silver Lake Braided Chalk, No. 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

**Locks—**

Cabinet ..... 35¢@35¢@14¢

**Door Locks, Latches, &c.—**

[Net prices are very often made on these goods.]

Reading Hardware Co. .... 40¢  
R. & E. Mfg. Co. .... 70¢  
Sargent & Co. .... 40¢@10¢  
Snow's Victor ..... 50¢@10¢

**Elevator—**

Stowell's ..... 89¢@45¢

**Padlocks—**

Wrought Iron ..... 75¢@10¢@80¢  
R. & E. Mfg. Co. Wrt. Steel and Brass 50¢

**Sash, &c.—**

Fitch's Bronze and Brass ..... 60¢@45¢  
Fitch's Iron ..... 55¢@50¢  
Ives' Patent ..... 55¢@50¢  
Payson's signal ..... 80¢  
Reading ..... 60¢@10¢@70¢

**Machines—****Boring—**

Without Augers.  
Upright. Angular.

Improved No. 3 ..... \$4.35 No. 1 \$5.00  
Improved No. 4 ..... 3.75 No. 2 3.35  
Improved No. 5 ..... 2.75  
Jennings ..... 2.50 3.00  
Miller's Falls ..... 5.75  
Snell's, Rice's Pat. 2.50 2.75  
Swan's, No. 500, 610 No. 200 6.45

**Holisting—**

Moore's Anti-Friction Differential Pulley Block ..... 30¢  
Moore's Hand Hoist, with Lock Brake 30¢

**Ice Cutting—**

Chandler's ..... 15¢

**Washing—**

Wayne American ..... \$38.00

Western Star, No. 2, \$28.00  
Western Star, No. 3, \$30.00  
St. Louis, No. 41, \$60.00

**Mallets—**

Hickory ..... 45¢@50¢@55¢  
Lignumvitae ..... 45¢@50¢@55¢  
Tinnars', Hickory and Applewood, doz. ..... 50¢@55¢

**Mats—**

Elastic Steel (W. G. Co.) ..... 10¢

**Mattocks—**

See Picks and Mattocks.

**Meat Cutters—**

See Cutters, Meat.

**Milk Cans—**

See Cans, Milk

**Mills—**

Enterprise Mfg. Co. .... 25¢@30¢  
Parker's Columbia and Victor ..... 30¢

**Mincing Knives—**

See Knives, Mincing.

**Molasses Cates—**

See Gates, Molasses.

**Money Drawers—**

See Drawers, Money.

**Mowers, Lawn—**

Net prices are generally quoted.

Cheap ..... all sizes, \$2.00@2.10  
Good ..... all sizes, \$2.50@2.75

High Grade 4.25 4.51 4.75 5.00  
Pennsylvania and Continental 6.00@10.50  
Quaker City ..... 70¢@55¢  
Great American ..... 70¢@55¢  
Philadelphia ..... 70¢@55¢  
Style M. & C. K. T. .... 70¢@55¢  
Style A, all Steel ..... 80¢@10¢  
Style E, Low Wheel ..... 80¢@10¢

Style E, High Wheel ..... 80¢@10.50¢  
Drexel and Gold Coin, low list ..... 50¢@55¢

**Nails—**

Cut and Wire. See Trade Report.

Wire Nails and Brads, Papered.

List July 20, 1899 ..... 85¢@85¢@105¢

Hungarian, Finishing, Upholsterers', &c. See Tacks

**Horse—**

Nos. 7 8 9 10  
A. C. .... 25¢ 23¢ 22¢ 21¢ 20¢ 40¢@55¢  
Ausable ..... 24¢ 23¢ 22¢ 21¢ 20¢ 50¢@105¢  
Capewell ..... 19¢ 18¢ 17¢ 16¢ 15¢ 10¢@55¢  
C. B. K. .... 25¢ 24¢ 23¢ 22¢ 21¢ 40¢  
Champion ..... 28¢ 26¢ 25¢ 24¢ 23¢ 40¢@55¢  
Clinto ..... 19¢ 17¢ 16¢ 15¢ 14¢ 30¢@105¢  
Maud S. .... 25¢ 23¢ 22¢ 21¢ 20¢ 50¢  
Neponset ..... 23¢ 21¢ 20¢ 19¢ 18¢ 40¢  
Putnam ..... 23¢ 21¢ 20¢ 19¢ 18¢ 33¢@45¢  
Vulcan ..... 23¢ 21¢ 20¢ 19¢ 18¢ 25¢@105¢  
American, Nos. 3 to 10 ..... 10¢@9¢@45¢

**Picture**

1 1/2 2 3/4 3 3 1/2 in.  
Brass Head ..... 1.50 70 35 1.00 gro.  
Por. Head ..... 1.10 1.10 1.10 gro.

**Nippers, See Pliers and Nippers.****Nut Crackers—**

See Crackers, Nut.

**Nuts—**

List Feb. 1, '99.

Cold Punched Off  
Mfrs. or U. S. Standard. List.

Hexagon, plain ..... 5.80@5.50¢  
Square, plain ..... 5.40@5.00¢  
Square, C. T. & R. .... 6.60@5.70¢  
Hexagon, C. T. & R. .... 6.40@6.50¢

**Hot Pressed:**

Mfrs., U. S. or Nar. Gauge Stan'd.  
Square Blank or Tapped 5.80@5.50¢  
Hexagon Blank or Tapped 6.80@6.50¢

**Oakum—**

Best or Government ..... lb. 64¢

Navy ..... lb. 5 c

U. S. Navy ..... lb. 5 1/2 c

Plumbers' Spun Navy ..... 2 1/2 c

In carload lots 1/4 lb. off f.o.b. New York.

**Oil, Axle—**

Snow Flake:  
1 qt. cans, per doz. .... \$3.00  
1 gal. cans, per doz. .... \$4.80  
5 gal. cans, per doz. .... \$26.00

**Oil Tanks—See Tanks, Oil.****Oilers—**

Brass and Copper ..... 40¢@10¢@50¢  
Tin or Steel ..... 60¢@10¢@65¢  
Zinc ..... 60¢@10¢@65¢

Malleable, Hammers' Improved, No. 1, \$3.60; No. 2, \$4; No. 3, \$4.40 per doz. 30¢

Malleable, Hammers' Old Pattern, same list ..... 50¢@105¢

Wilmot & Hobbs Mfg. Co.:  
Spring Bottom Cans ..... 70¢@10¢@105¢  
Railroad Oilers, etc. .... 80¢@10¢@105¢

**Oponers—**

Can—

French ..... doz. 35¢

Iron Handle ..... doz. 25¢@7¢

Sprague, Iron Hdl. per doz. 35¢@40¢

Sardine Scissors ..... doz. \$1.75@2.07

Tip Top ..... per doz. \$1.75

National, per gro. .... \$1.75@2.00

Stowell's ..... per doz. 40¢@45¢

Waldorf, per gro. .... \$9.00

**Egg—**

Nickel Plate ..... per doz. \$2.00

Silver Plate ..... per doz. \$4.00

**Packing—**

Rubber—

Standard, fair quality ..... 70¢@10¢@75¢

Inferior quality ..... 75¢@10¢@80¢

Extra ..... 60¢@5¢@65¢@10¢

Jenkins' Standard, per 804 ..... 35¢@25¢@35¢

**Miscellaneous—**

American Packing ..... 9¢@10¢ lb.

Cotton Packing ..... 13¢@14¢ lb.

Italian Packing ..... 10¢@11¢ lb.

Jute ..... 3¢@5¢ lb.

Russia Packing ..... 12¢@13¢ lb.

**Pails—**

Creamery—

S. & O., with gauges, No. 1 \$0.50;  
No. 2, \$0.75 per doz.

**Galvanized—**

Price per gro.

Inch ..... 10 12 14

Water, Regular ..... 18 00 11 00 24 00

Water, Heavy ..... 21 00 35 00





Shovels and Tongs—

Brass Head.....60¢50¢@10¢  
Iron Head.....60¢50¢@10¢

Sieves and Sifters—

Hunter's Imitation, gro. \$10.00@10.50  
Buffalo Metallic Blue, S. S. & Co., 14 in. gr. 14418 1820 1820  
\$12.90 \$13.80 \$15.00  
Rolls, 14 in. gr. \$10.00  
Electric Light, 14 in. gr. \$12.00  
Hunter's Genuine, 14 in. gr. \$12.50  
Shaker (Barier's Pat.) Flour Sifters, 14 in. gr. \$3.00

Sieves, Tin Rim—

Per dozen  
Inch.....14 18 20  
Black, full size.....\$0.95 .98 1.00 1.10  
Plated, full size.....\$1.05 1.08 1.10 1.20  
Black, scant.....\$0.78 .80 .85

Sieves, Wooden Rim—

Nested, 10, 11 and 12 Inch.  
Mesh 18, Nested, doz.....\$0.75@0.80  
Mesh 20, Nested, doz......85@.90  
Mesh 24, Nested, doz.....1.00@1.05

Sinks—Cast Iron—

Standard list.....60¢@60¢10¢  
NOTE.—There is not entire uniformity in lists used by jobbers.

Wrought Steel—

Columbus Galv'd and Enamelled.....60¢50¢  
Columba, Painted.....45¢  
L. & G. Mfg. Co., Galvanized.....50¢  
L. & G. Mfg. Co., Enamelled.....60¢

Skeins, Wagon—

Cast Iron.....70¢10¢@75¢  
Malleable Iron.....10¢10¢@50¢  
Steel.....10¢10¢@10¢

Slates—

"D" Slates.....40¢@40¢10¢  
Unexcelled Noiseless Slates.....60¢10¢10¢@10¢10¢10¢  
Wire Bound.....35¢@40¢50¢  
Double Slates, add \$1 case, net.

Slaw Cutters—See Cutters.

Slicers, Vegetable—

Sterling \$2.00.....83¢45¢

Snaps, Harness—

German.....40¢@40¢10¢  
Covert Mfg. Co.:  
Derby.....35¢25¢  
High Grade.....45¢25¢  
Jockey.....45¢25¢  
Trojan.....45¢25¢  
Yankee.....35¢25¢  
Yankee, Roller.....30¢25¢

Covert's Saddlery Works:

Banner.....60¢10¢  
Crown.....60¢10¢  
Model.....60¢10¢  
Triumph.....60¢10¢  
W. & E. T. Fitch Co.:  
Bristol.....40¢10¢  
Empire.....50¢55¢  
German.....40¢  
National.....50¢55¢  
Perfect.....45¢  
Clippert.....50¢55¢  
Champion.....40¢  
Security.....60¢55¢  
Victor.....60¢55¢

Onida Community:  
Solid Steel.....65¢65¢ 0¢  
Solid 3 wire.....65¢10¢@65¢10¢10¢  
Sargent's Patent Guarded.....65¢10¢

Snaths—

Scythe.....45¢50¢25¢

Snips, Tinnners—See Shears

Soldering Irons—

See Irons, Soldering.

Spoke Trimmers—

See Trimmers, Spoke.

Spoons and Forks—

Silver Plated—

Flat Ware.....60¢10¢@60¢10¢10¢

Miscellaneous—

German Silver.....60¢10¢@60¢10¢10¢

Springs—

Door—

Gem (Coll).....20¢  
Star (Coll).....30¢  
Torrey's Rod, 89 in.....\$0.11@1.25  
Victor (Coll).....50¢10¢10¢

Carriage, Wagon, &c.

Factory Shipments.  
1 1/4 in and wider.....Blk. Hf. Brt. Brt.  
4 1/4 4 1/2 4 3/4 4 1/2  
Cliff's Bolster Springs.....35¢  
Cliff's Seat Springs.....\$ pair 55¢

Sprinklers, Lawn—

Enterprise.....25¢@30¢  
Philadelphia No. 1, \$ doz. \$12; No. 2, \$15; No. 3, \$24.....30¢

Squares—

Nickel plated.....List Jan. 5, 1901  
Steel and Iron.....\$0.70@75¢  
Rosewood Hd. Try Square and T-Bevels.....60¢10¢10¢@70¢  
Iron Hd. Try Squares and T-Bevels.....40¢10¢@40¢10¢20¢

Diston's Try Sq. and T-Bev. 14 in. Winterbottom's Try and Miter.....50¢10¢

Squeezers—

Lemon—

Wood, Common, gro., No. 0, \$3.25 @ \$5.50; No. 1, \$2.25@ \$6.50.  
Wood, Porcelain Lined:  
Cheap.....doz. \$3.00@ \$7.75

Good Grade.....dos. \$3.00@ \$5.50  
Tinned Iron.....dos. \$0.75@ \$1.15  
Iron, Porcelain Lined dos. \$3.50@ \$5.50  
Jennings' Star.....\$ doz. \$1.85@ \$1.90  
King.....\$ doz. \$3.00

Staples—

Barbed Blind.....lb. 7@7 1/2¢  
Electricians', Association list.....10¢10¢10¢10¢  
Fence Staples, same price as Barbed Wire, See Trade Report.  
Poultry Netting, Staples.....per lb. 3 1/4@3 1/2¢  
Grand Crossing Tack Co.'s list.....80¢10¢

Steels, Butchers'—

Dick's.....40¢  
Foster Bros.....30¢  
C. & A. Hoffmann's.....40¢

Steelyards—

Stocks and Dies—

Blacksmiths'.....40¢@40¢10¢  
Gardner Die Stocks No. 1.....20¢  
Green River Die Stocks, larger sizes.....25¢  
Lightning Screw Plate.....25¢  
Little Giant.....25¢  
Reece's New Screw Plates.....25¢30¢  
Curtis Reversible Ratchet Die Stock.....25¢

Stone—

Soythe Stones—

Chicago Wheel & Mfg. Co.:  
Gem Corundum, 10 inch, \$10.50 per gro., 12 inch, \$12.00  
Cleveland Stone Co., list Nov., '92.....33¢45¢  
Pike Mfg. Co., list '95-'96.....33¢45¢

Oil Stones, &c.

Chicago Wheel & Mfg. Co.:  
Corundum Oil, Double Grit.....50¢  
Corundum Axe Stones, Slips, etc.....55¢  
Pike Mfg. Co.:  
Hindostan No. 1, \$ 10.....85¢  
Sand Stone.....33¢45¢  
Turkey Oil Stone, Extra.....33¢45¢  
5 to 8 in.....85¢  
Turkey Slips.....1.50  
Lily White Washita.....60¢  
Rosa Red Washita.....60¢  
Washita Stone, Extra.....50¢  
Washita Stone, No. 1.....40¢  
Washita Stone, No. 2.....30¢  
Lily White Slips.....90¢  
Rosa Red Slips.....90¢  
Washita Slips, Extra.....80¢  
Washita Slips, No. 1.....70¢  
Arkansas Stone, No. 1, 3 to 5 in. \$2.40  
Arkansas Stone, No. 1, 5 to 10 in. \$3.50  
India Oil Stones.....25¢  
Tantle Mills:  
Emery Oil, \$ doz. \$5.00.....50¢80¢

Stoners—

Cherry—

Enterprise.....25¢30¢

Stops, Bench—

Millers Falls.....15¢10¢  
Morrill's.....\$ doz. No. 1, \$10.00; No. 2, \$11.00, 40¢20¢

Stops, Window—

Ives' Patent.....25¢55¢  
Wilcox, Steel, per doz., \$4.00.....50¢

Stove Boards—

See Boards, Stove.

Stove Polish—See Polish, Stove.

Strainers Pump—

Diamond Joe Pump Strainers, per doz. 75¢

Straps, Box—

Carry's Universal, case lots.....20¢10¢

Stretchers, Carpet—

Cast Iron, Steel Points.....doz. 55¢65¢  
Socket.....doz. \$1.75

Strops, Razor—

Smith & Hemenway Co.....70¢

Stuffers, Sausage—

Miles' Challenge, \$ doz. \$30.....50¢50¢55¢  
Enterprise Mfg. Co.....25¢25¢75¢  
National Specialty Mfg. Co., list Jan. 1, '97.....30¢

Tacks Brads, &c.—

List Jan. 15, '99.  
Carpet Tacks, American.....90¢10¢@.¢  
American Cut Tacks.....90¢30¢@.¢  
Swedes Iron Tacks.....90¢10¢@.¢  
Swedes Upholsterers' Tacks.....90¢10¢@.¢  
Gimp Tacks.....90¢10¢@.¢  
Lace Tacks.....90¢10¢@.¢  
Trimmers' Tacks.....90¢30¢@.¢  
Looking Glass Tacks.....70¢10¢@.¢  
Bill Posters and Railroad Tack.....90¢10¢@.¢  
Hungarian Nails.....80¢25¢@.¢  
Common and Patent Brads, 70¢10¢@.¢  
Trunk and Clout Nails.....80¢10¢@.¢

NOTE.—The above prices are for straight weights. An extra 5¢ is given Star Weights and an extra 10¢ is on Standard Weights.

Miscellaneous—

Double Point Tacks.....90¢60¢ or 7 tens  
Steel Wire Brads, R. & E. Mfg. Co.'s list.....60¢10¢@90¢  
See also Nails, Wire.

Tanks, Oil—

Emerald, S. S. & Co.....30-gal. \$3.20  
Emerald, S. S. & Co.....60-gal. \$4.00  
Queen City S. S. & Co., 70-gal. \$3.50  
Queen City S. S. & Co., 60-gal. \$4.25

Tapes, Measuring—

American Axes' Skin.....10¢10¢@50¢  
Patent Leather.....25¢30¢55¢  
Steel.....10¢10¢55¢

Chesterman's.....25¢@25¢55¢  
Eddy's Steel.....40¢40¢55¢  
Eddy's Metal.....33¢45¢55¢  
Keweenaw Steel & Metal Co., Steel and Metal, Lower list, 1899.....35¢  
Lufkin's Steel.....33¢45¢55¢  
Lufkin's Metal.....30¢30¢55¢

Thermometers—

Tin Case.....80¢80¢10¢

Ties, Bale—Steel.

Standard Wire.....50¢10¢55¢

Ties, Wall—

Cleveland Wire Spring Co.:  
Galv. St. el 5 3/32 x 8 1/4 in. \$ 1000.....\$10.00  
Galv. Steel 5-32 x 8 1/4 in. \$ 1000.....\$11.00  
Galv. Steel 5-32 x 1 1/4 in. \$ 1000.....\$12.00  
Galv. Steel 5 3/32 x 1 1/4 in. \$ 1000.....\$14.00

Tinners' Shears, &c.—

See Shears, Tinnners', &c.

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tire Benders, Upsetters, &c.—See Benders and Upsetters, Tire

Tobacco Cutters—

See Cutters, Tobacco.

Tools—

Coopers'—

L. & I. J. White.....90¢20¢55¢

Saw—

Atkins' new list.....40¢  
Simonds' Improved.....33¢45¢  
Simonds' Crescent.....25¢

Ship—

L. & I. J. White.....25¢

Transom Lifters—

See Lifters, Transom.

Traps—Game—

Onida Pattern.....75¢50¢75¢10¢55¢  
Newhouse.....45¢50¢  
Hawley & Norton.....85¢50¢70¢  
Victor (Onida Pattern).....75¢75¢10¢  
Star (Blake Pattern).....65¢10¢70¢55¢

Mouse and Rat—

Mouse, Wood, Choker, doz. holes.....8 1/2@9¢

Mouse, Round or Square Wire.....doz. \$0.35@1.00

Diamond Joe Mouse Traps.....per doz. 80¢

Diamond Joe Rat Traps.....per doz. \$1.00

Marty French Rat and Mouse Traps (Genuine):  
No. 1, Rat, Each \$1.19 1/4; \$ doz. \$12.00  
No. 3, Rat, \$ doz. \$6.00; case of 50 \$5.25 doz.

No. 3 1/2, Rat, \$ doz. \$4.75; case of 75 \$4.25 doz.

No. 4, Mouse, \$ doz. \$3.50; case of 75 \$3.75 doz.

No. 5, Mouse, \$ doz. \$2.75; case of 75 \$2.25

Schuyler's Rat Killer, No. 1, \$ gr. \$30.00; No. 2, \$ gr. \$30.00; Mouse, No. 3, \$18.00.....50¢

Fly—

Balloon, Globe or Acme.....doz. \$1.15@1.25; gro. \$11.00@12.00

Harper, Champion or Paragon.....doz. \$1.25@1.40; gro. \$13.50@15.00

Trimmers, Spoke—

Bonney's Nos. 1 and 2.....40¢

Trowels—

Diamond Brick and Pointing.....30¢

Diamond Plastering.....25¢

Diamond "Standard Brand" and Gable Trowels.....40¢

Never-Break Steel Garden Trowels, gro. \$7.00

Peace's Plastering.....30¢

Rose Brick and Plastering.....25¢55¢

Woodrough & McParlin, Plastering.....25¢10¢

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list.....40¢

Daisy Stove Trucks, improved pattern \$ doz. \$21.00

Model Stove Trucks.....\$ doz. \$18.50

Tubs, Wash—

No. 1 2 3  
Galvanized, per doz. \$5.00 5.50 6.00

Galvanized Wash tubs (S. S. & Co.):  
No. 1, 2, 3, 10, 20, 30  
Per doz \$5 25 6.00 6.75 6.50 7 25 8.00

Twine—

Binder—

Small lots f. o. b. New York, Philadelphia or Boston.

White Sisal, 500 ft. to lb. per lb. 7 1/4

Standard, 500 ft. to lb. per lb. 7 1/4

Manila, 500 ft. to lb. per lb. 9

Pure Manila, 550 ft. to lb. per lb. 10 1/4

For carloads deduct 1/4¢ per lb.

Miscellaneous—

Flax Twine— BC B.  
No. 9, 1/4 and 1/2-lb. Balls.....25¢ 30¢  
No. 12, 1/4 and 1/2-lb. Balls.....15¢ 21¢  
No. 18, 1/4 and 1/2-lb. Balls.....15¢ 19¢  
No. 24, 1/4 and 1/2-lb. Balls.....15 1/2¢ 18 1/2¢  
No. 36, 1/4 and 1/2-lb. Balls.....15¢ 18¢  
Chalk Line, Cotton, 1/2-lb. Balls.....22¢25¢

Cotton Mops, 6, 9, 12 and 15 lb. to doz.....7@8¢

Cotton Wrapping, 5 Balls to lb.....10¢@15¢

American 2-Ply Hemp, 1/4 and 1/2-lb. Balls.....15¢18¢

American 3-Ply Hemp, 1-lb. Balls.....15¢18¢

India 2-Ply Hemp, 1/4 and 1/2-lb. Balls (Spring Twine).....9¢

India 3-Ply Hemp, 1-lb. Balls.....9¢

India 2-Ply Hemp, 1/4-lb. Balls.....9¢  
S. S. & Co. 2-Ply Jute, 1/2-lb. Balls.....10¢10 1/2¢  
Mason Line, Linen, 1/2-lb. Balls.....15¢  
No. 264 Mattress, 1/4 and 1/2-lb. Balls.....37¢  
Wool.....7¢

Vises—

Solid Box.....60¢

Bonney's Saw Vises.....40¢10¢

Parallel—

Athol Machine Co.:  
Simpson's Adjustable.....40¢  
Standard.....40¢  
Amateur.....25¢  
Bonney's.....40¢10¢  
Fisher & Norris Double Screw.....15¢10¢  
Holland's.....40¢  
Machinists'.....40¢  
Keston.....70¢  
Lewis Tool Co.....20¢30¢  
Massey's Perfect.....15¢20¢  
Massey's Clincher.....30¢40¢  
Merrill's.....20¢  
Miller's Falls.....low list 10¢

Parker's:  
Victor.....20¢25¢  
Regulars.....20¢25¢  
Vulcan.....40¢45¢  
Combination Pipe.....55¢60¢  
Prentiss.....20¢25¢  
Sargent's.....40¢  
Simpson's Adjustable.....40¢  
Snediker's X, L.....20¢25¢  
Stephens.....20¢25¢  
Van, W. & W. Hd. Co.....40¢

Saw Filers—

Bonney's, No. 1, \$13; No. 2, \$10 50¢10¢

Diston's D S Clamp and Guide, \$ doz \$30.....25¢

Reading.....40¢10¢

Wentworth's Rubber Jaw, Nos. 1, 2 and 3.....30¢10¢

Miscellaneous—

Signal & Keeler Combination Pipe Vise.....60¢

Parker's Combination Pipe:  
27 Series.....60¢  
187 Series.....60¢55¢  
No. 870.....40¢

Wads—Price Per M.

B. E., 11 up.....80¢

B. E., 9 and 10.....70¢

B. E., 8.....80¢

B. E., 7.....80¢

P. E., 11 up.....\$1.00

P. E., 9 and 10.....1.25

P. E., 8.....1.50

P. E., 7.....1.50

Ely's B. E., 11 and larger.....\$1.70@1.75

Ely's P. E., 11 to 30.....\$3.00@3.25

Wagon Jacks—

See Jacks, Wagon.

Ware, Hollow—

Aluminum—

S. S. & Co. Reduced List.....40¢

Cast Iron, Hollow—

Stove Hollow Ware:  
Ground.....65¢

Unground.....70¢

White Enamelled Ware:  
Maslin Kettles.....80¢

Boilers and Saucepans.....50¢10¢

Tinned Boilers and Saucepans.....50¢10¢

See also Pots, Glue.

Enamelled—

Agate Nickel Steel Ware, list July '99, 85¢

Granite Ware, list Jan. 1, '94, revised Jan. 2, '95.....40¢10¢

Second Quality, Agate Nickel Steel.....85¢

**Washers—****Leather, Axle—**

Solid.....30¢10¢10¢35¢  
 Patent.....35¢10¢35¢30¢  
 Cot. 1/4 1 1/4 1 1/4 1/4 inch.  
 110 120 130 150 per 100

**Iron or Steel—**

Size bolt.....5-16 3/4 1/2 3/4 1  
 Washers.....\$5.60 4.70 3.50 3.30 3.00  
 In lots less than one keg add 1/4¢ per  
 lb., 5-lb. boxes add 1/4¢ to list.

**Cast Washers—**

Over 1/2 inch, barrel lots, per lb.....  
 1 1/4¢1 1/4¢

**Washer Cutters—**

See Cutters, Washer.

**Washing Machines—**

See Machines, Washing.

**Water Coolers—**

See Coolers, Water.

**Wedges—**

Oil Finish.....lb. 3/4¢

**Weights, Sash—**

Per ton.....\$20.00@22.50  
 Western Foundries make price  
 \$10¢\$1 lower.

**Well Buckets, Galvanized**  
See Pails, Galvanized.**Wheels Well—**

8-in., \$1.65@1.75; 10-in., \$2.00@2.10;  
 12-in., \$2.50@2.75; 14-in., \$4.25@4.40

**Wire and Wire Goods—**

Brt. and Ann., 6 to 9.....70¢10¢  
 Brt. and Ann., 10 to 18.....73¢5¢  
 Brt. and Ann., 19 to 26.....75¢7¢  
 Brt. and Ann., 27 to 36.....75¢10¢2¢  
 Cop'd and Galv., 6 to 9.....60¢5¢  
 Cop'd and Galv., 10 to 18.....70¢  
 Cop'd and Galv., 19 to 26.....70¢10¢  
 Cop'd and Galv., 27 to 36.....72¢5¢  
 Tinned, 6 to 14.....70¢10¢5¢  
 Tinned, 15 to 18.....70¢10¢5¢  
 Tinned, 19 to 26.....70¢10¢  
 Tinned, 27 to 36.....65¢10¢  
 Annealed Wire on Spools.....70¢5¢@70¢  
 10¢  
 Brass and Copper Wire on Spools.....  
 60¢5¢@50¢10¢  
 Brass, list Feb. 26, '96.....25¢

Copper, list Feb. 26, '96.....15¢  
 Cast Steel Wire.....60¢  
 Stubs' Steel Wire.....\$6.00 to 2.40¢  
 Wire Clothes Line, see Lines.  
 Wire Picture Cord, see Cord.

**Bright Wire Goods—**

Iron and Brass, list July 1, 1899.....  
 85¢10¢@.1

**Wire Cloth and Netting—**

Galvanized Wire Netting.....30¢20¢35¢  
 Painted Screen Cloth per 100 ft. \$1.00  
 Light Hardware Grade:  
 2-3 Mesh, Plain (Sc. list) sq. ft.....  
 2-3 Mesh, Galv. (Sc. list) sq. ft.....2 1/4¢

**Wire Barb—See Trade Report.****Wire, Rope—See Rope, Wire.****Wrenches—**

Agricultural.....70¢10¢75¢  
 Case lots.....75¢10¢  
 Aome.....60¢10¢  
 Baxter's S.....60¢10¢  
 Coes' Genuine.....40¢10¢5¢5¢  
 Coes' Mechanics.....40¢10¢10¢5¢5¢  
 Alligator.....60¢10¢10¢  
 Benis & Co's.....35¢5¢  
 Adjustable S.....35¢5¢

Adjustable S Pipe.....40¢  
 Briggs' Pattern.....30¢10¢  
 Combination Black.....40¢5¢  
 Combination Bright.....50¢  
 Cylinder or Gas Pipe.....50¢  
 Extra Heavy.....45¢  
 Merrick's Pattern.....50¢  
 No. 3 Pipe, Bright.....50¢  
 Bindley Automatic.....30¢  
 Boardman's.....30¢  
 Donohue's Engineer.....40¢10¢  
 Eagle.....50¢10¢  
 Gem Pocket.....30¢  
 Hercules.....70¢  
 Knife Handle, Machinists' (W. & B.)  
 Case lots.....50¢10¢  
 Less than case lots.....50¢  
 Improved Pipe (W. & B.).....5¢  
 Solid Handles, P. S. & W.....50¢10¢  
 Stevenson.....60¢10¢10¢

**Wrought Goods—**

Staples, Hooks, etc., list March 17  
 '92.....85¢10¢35¢25¢

**Yokes, Neck—**

Covert Saddlery Works, Trimme.....60¢5¢  
 Covert Saddlery Works, Neck Yoke  
 Centers.....70¢

**Yokes, Ox, and Ox Bows—**

Fort Madison's Farmers & Freighters',  
 list not

**Zinc—**

Sheet.....lb 6 1/4¢@70¢

**PAINTS, OILS AND COLORS.—Wholesale Prices.****White Lead, Zinc, &c.**

Lead, Foreign white, in Oil.....7 1/4¢@ 9 1/4¢  
 Lead, American White, in Oil:  
 Lots of 500 lb or over.....@ 6 1/4¢  
 Lots less than 500 lb.....@ 7¢  
 Lead, White, in oil, 25 lb tin  
 pails, add to keg price.....@ 1/4¢  
 Lead, White, in oil, 12 1/2 lb tin  
 pails, add to keg price.....@ 1¢  
 Lead, White, in oil, 1 to 5 lb as-  
 sorted tins, add to keg price.....@ 1 1/4¢  
 Lead White, Dry in bbls.....5 1/4¢@ 5 1/2¢  
 Lead, American, Terms: On lots of 500  
 lbs. and over, 60 days, or 25¢ for cash if  
 paid in 15 days from date of invoice.  
 Zinc, American, dry.....@ 4 1/4¢@ 4 1/2¢  
 Zinc, Paris, Red Seal, dry.....@ 5 1/2¢  
 Zinc, Paris, Green Seal, dry.....@ 5 1/2¢  
 Zinc, Antwerp Red Seal, dry.....@ 6 1/2¢  
 Zinc, Antwerp, Green Seal, dry.....@ 7 1/4¢  
 Zinc, V. M. French, in Poppy Oil,  
 Green Seal:  
 Lots of 1 ton and over.....12¢@12 1/4¢  
 Lots of less than 1 ton.....12 1/4¢@12 1/2¢  
 Zinc, V. M. French, in Poppy Oil,  
 Red Seal:  
 Lots of 1 ton and over.....10 1/4¢@11 1/4¢  
 Lots of less than 1 ton.....11 1/4¢@11 1/2¢  
 Discounts.—V. M. French Zinc.—Dis-  
 counts to buyers of 10 bbl. lots of one or  
 assorted grades, 15; 25 bbls., 25; 50  
 bbls., 45.

**Dry Colors.**

Black, Carbon.....@ 20¢  
 Black, Drop, Amer.....2 1/4¢@ 4¢  
 Black, Drop, Eng.....7¢@11¢  
 Black, Ivory.....15¢@21¢  
 Lamp, Com.....3¢@5¢  
 Blue, Celestial.....@ 4¢@ 6¢  
 Blue, Chinese.....@ 30¢@ 34¢  
 Blue, Prussian.....@ 30¢@ 34¢  
 Blue, Ultramarine.....@ 30¢@ 35¢  
 Brown, Spanish.....@ 1¢  
 Brown, Vandyke, Amer.....1 1/4¢@ 2 1/4¢  
 Brown, Vandyke, Foreign.....2 1/4¢@ 3¢  
 Carmine, No. 40.....@ 3¢@ 3 1/2¢  
 Green, Chrome, ordinary.....5¢@ 6¢

**Green, Chrome, pure.....16¢@20¢**

Lead, Red, bbls. 1/2 bbls. and kegs:  
 Lots 500 lb or over.....@ 6¢  
 Lots less than 500 lb.....@ 6 1/4¢  
 Litharge, bbls. 1/2 bbls. and kegs:  
 Lots 500 lb or over.....@ 6¢  
 Lots less than 500 lb.....@ 6 1/4¢  
 Ocher, French Washed.....1 1/4¢@ 2 1/4¢  
 Ocher, Dutch Washed.....4 1/4¢@ 5¢  
 Ocher, American.....@ 10¢@15.00  
 Orange Mineral, English.....@ 8¢@11 1/4¢  
 Orange Mineral, French.....11 1/4¢@11 1/2¢  
 Orange Mineral, German.....@ 8¢@ 9¢  
 Orange Mineral, American.....7 1/4¢@ 8¢  
 Red, Indian, English.....4 1/4¢@ 5¢  
 Red, Indian, American.....3¢@ 3 1/4¢  
 Red, Turkey, English.....4¢@ 6¢  
 Red, Tuscan, English.....7¢@10¢  
 Red, Venetian, Amer.....@ 100¢  
 Red, Venetian, English.....@ 1.50@2.10  
 Sienna, Italian, Burnt and  
 Powdered.....@ 3 1/4¢@ 9 1/4¢  
 Sienna, Ital., Raw, Powd.....3 1/4¢@ 7 1/4¢  
 Sienna, American, Raw.....1 1/4¢@ 2¢  
 Sienna, American, Burnt and  
 Powdered.....@ 1 1/4¢@ 2¢  
 Talc, French.....@ 100¢@1.25  
 Talc, American.....@ 90¢@1.10  
 Terra Alba, French.....@ 100¢@ 1.00  
 Terra Alba, English.....@ 95¢@1.00  
 Terra Alba, American No. 1.....@ 85¢  
 Terra Alba, American No. 2.....@ 45¢@50¢  
 Umber, Turkey, Bnt. & Powd.....2 1/4¢@ 3 1/4¢  
 Umber, Turkey, Raw & Powd.....2 1/4¢@ 3 1/4¢  
 Umber, Bnt. Amer.....1 1/4¢@ 2¢  
 Umber, Raw, Amer.....1 1/4¢@ 2¢  
 Yellow, Chrome.....10¢@25¢  
 Vermilion, American Lead.....10¢@25¢  
 Vermilion, Jutekilver, bulk.....@ 70¢  
 Vermilion, Quicksilver, bags.....@ 71¢  
 Vermilion, English, Import.....@ 80¢@95¢  
 Vermilion, Chinese.....@ 1.00@1.20

**Colors in Oil.**

Black, Lampblack.....12¢@14¢  
 Blue, Chinese.....36¢@40¢  
 Blue, Prussian.....32¢@38¢  
 Blue, Ultramarine.....13¢@16¢

Brown, Vandyke.....9 1/4¢@13¢  
 Green, Chrome.....10¢@12¢  
 Green, Paris.....@ 24¢  
 Sienna, Raw.....10¢@13¢  
 Sienna, Burnt.....10¢@13¢  
 Umber, Raw.....9 1/4¢@12¢  
 Umber, Burnt.....9 1/4¢@12¢

**Miscellaneous.**

Barytes, Foreign, # ton.....\$19.00@21.00  
 Barytes, Amer. doated.....19.00@20.00  
 Barytes, Crude.....9.00@10.00  
 Chalk, in bulk.....@ 2.60@ 2.75  
 Chalk, in bbls.....@ 100¢  
 China Clay, English.....@ 12.00@17.50  
 Cobalt, Oxide.....@ 100¢@ 2.50  
 Whiting, Common.....@ 100¢  
 Whiting, Gliders......54¢@.64  
 Whiting, extra Gliders......53¢@.68

**Putty.**

In bulk.....@ 1.90  
 In bladders.....2.40  
 In cans, 1 lb to 5 lb.....2.50  
 In cans, 1 lb to 5 lb.....3.60

**Spirits Turpentine.**

In Southern bbls.....@ 40¢  
 In machine bbls.....@ 40 1/2¢

**Glue.**

Low Grade.....@ 12¢@15¢  
 Cabinet.....13 1/4¢@16 1/4¢  
 Medium White.....14 1/4¢@16 1/4¢  
 Extra White.....18¢@23¢  
 French.....12¢@40¢  
 Irish.....13 1/4¢@16¢

**Animal, Fish and Vege-  
table Oils.**

Linseed, City, raw.....@ gal. 65¢@68¢

Linseed, City, boiled.....65¢@70¢  
 Linseed, State and West'n, raw 65¢  
 Linseed, raw Calcutta seed.....@ 64¢  
 Lar. I, Prime.....66¢@67¢  
 Lard, Extra No. 1.....50¢@52¢  
 Lard, No. 1.....41¢@43¢  
 Cotton-seed, Crude.....27 1/2¢@28¢  
 Cotton-seed, Summer Yellow,  
 prime.....31¢@31 1/4¢  
 Cotton-seed Summer Yellow,  
 off grades.....30¢@30 1/4¢  
 Sperm, Crude.....@ 30¢  
 Sperm, Natural Spring.....@ 30¢  
 Sperm, Bleached Spring.....@ 30¢  
 Sperm, Natural Winter.....58¢@59¢  
 Sperm, Bleached Winter.....63¢@64¢  
 Whale, Crude.....@ 30¢  
 Whale, Natural Winter.....@ 47¢  
 Whale, Bleached Winter.....@ 48¢  
 Menhaden, Crude, Sound.....28¢@29¢  
 Menhaden, Light Strained.....32¢@33¢  
 Menhaden, Bleached Winter.....33¢@34¢  
 Menhaden, Ex Bleached Winter.....33¢@34¢  
 Tallow, prime.....52¢@53¢  
 Coconut, Ceylon.....5.65@5.75  
 Coconut, Coochla.....@ 34¢@ 35¢  
 Cod, Domestic.....34¢@35¢  
 Cod, Newfoundland.....36¢@37¢  
 Red Elaine.....35¢@36¢  
 Red Saponified.....@ 5¢@ 5 1/4¢  
 Olive, Italian, bbls.....57 1/4¢@58¢  
 Neatsfoot, prime.....32¢@34¢  
 Palm, prime, Lagos.....@ 5 1/4¢@5 1/2¢

**Mineral Oils.**

Black, 20 gravity, 25¢30 cold  
 test.....@ gal. 94¢@104¢  
 Black, 20 gravity, 15 cold test, 10¢@11 1/4¢  
 Black, summer.....94¢@94 1/4¢  
 Cylinder, light filtered.....14 1/4¢@17 1/4¢  
 Cylinder, dark filtered.....11 1/4¢@14 1/4¢  
 Paraffine, 903-907 gravity.....12¢@12 1/4¢  
 Paraffine, 903 gravity.....11 1/4¢@11 1/2¢  
 Paraffine, 883 gravity.....9¢@10¢  
 Paraffine, red, No. 1.....12 1/4¢@12 1/2¢  
 In small lots 1/4¢ advance.

# THE IRON AGE.

The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades,  
 and a standard authority on all matters relating to those branches of industry.

**RATES OF SUBSCRIPTION: INCLUDING POSTAGE.****UNITED STATES AND BRITISH AMERICA.**

Regular Edition, Issued every THURSDAY morning, \$5.00 a year  
 Two Dollar Edition, large number FIRST and THIRD THURSDAYS of every month, Bulletin number each intervening Thursday, 2.00 "  
 Dollar Edition, large number FIRST THURSDAY of every month, Bulletin number each intervening Thursday, 1.00 "

**RATES OF ADVERTISING: ONE INCH.**

ONE INSERTION, - - - - - \$3.00  
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FEBRUARY 13, 1901.

## IRON AND STEEL— Bar Iron from Store

Manufactured, 8/27/78

Ingot—

Lake ..... 174 @ 174

Common High Brass	in. 9	in. 12	in. 14	in. 16	in. 18	in. 20	in. 22	in. 24
Wider than and including	19	14	16	18	20	22	24	26
To No. 20 inclusive.	.22	.23	.25	.27	.29	.31	.33	.36
Nos. 21, 22, 23 and 24.	.22	.24	.26	.28	.30	.32	.34	.37
Nos. 25 and 26 .....	.25	.24	.27	.29	.31	.33	.35	.38
Nos. 27 and 28 .....	.28	.25	.29	.30	.32	.34	.36	.39

Stove Plate Scrap.....	gross ton	\$7.00	7.50
Best Iron.....	gross ton	\$5.00	5.50

